2008–2009 SAFETY EQUIPMENT CATALOG

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MSA

The Safety Company

90+ Years of Products, Service and Expertise

MSA offers more than safety

Helping first responders is part of our history

Mine Safety Appliances Company was founded in 1914 by two mining engineers who designed or improved safety, rescue and protective gear. MSA has continued to help protect people from hazards great and small, and today helps protect millions of workers in many industries worldwide. MSA has sold gas masks for military use since World War I. We have always understood the demands placed on crucial protective equipment in extremely hazardous conditions. MSA historically and steadfastly has helped first responders before, during, and after emergencies, from small house fires to multiple explosions at chemical plants, from hazardous materials spills to hurricanes.

MSA makes and markets respiratory protection, gas-and-flame-detection instruments, head, eye, face, and hearing protection, fire and police helmets, fall protection, thermal imaging cameras, ballistic protection, and mining, emergency, and specialty equipment via a national network of trained distributors, product specialists and knowledgeable contacts. MSA has been a global company for decades, protecting millions of people around the world. What have we done for YOU lately?

MSA offers more than safety on the job

Great Products

MSA began making high-quality safety products in 1914. Technology enhances our innovation in product development, with computer-aided design and stereo lithography, a technology which produces prototypes rapidly. MSA responds quickly as your needs change. Within most product groups is a wide selection of models, sizes, colors, materials, options, accessories and prices. Many components of MSA products are formulated, machined, tooled or molded in-house from raw materials, allowing for greater manufacturing control as well as quality assurance. MSA processes are certified as meeting ISO 9001-2000 quality assurance requirements of the International Standard Organization (ISO).

Great Plans for the Future

MSA continues to enhance our operations and expand/ improve our product lines by acquiring companies and/or new capabilities to better serve our customers. In 2002, MSA began manufacturing specialized helmets for military and law-enforcement use, and in 2004 added passive and electronic hearing protection. In 2005, MSA created a new ballistic protection product line, offering ballistic vests to protect law enforcement personnel.

Great People

Your personalized MSA service starts with a trained MSA-authorized distributor near you and the largest team of field representatives in the safety industry. They understand your hazards and the regulations with which you must comply, and will help to analyze your safety requirements and recommend solutions. MSA-authorized distributors are knowledgeable, well-trained and proficient at providing the services you need and also can assist in training your in-house trainer. Training your employees properly in the use, care and maintenance of our products is easy with MSA-produced VHS or DVD presentations. See page 186 for a list of available programs.

MSA's website includes on-line product information offering the basics of most products in this printed catalog, plus links to .pdf versions of printed literature and other materials that you can print yourself. Go to **www.MSAnet.com.** To send us an e-mail message, use **info@MSAnet.com**. Most MSA literature is also available via FAX, fast! Just dial 1-800-672-9010 for our QuickLit℠ Information Service. Follow recorded instructions and enter your literature request and your FAX machine number. Outside the U.S. dial (+1) 412-967-3446.

Award-Winning Customer Service

Every customer wants it. Every good business has it.

Our multiple-award-winning Customer Service Center (CSC) proves that MSA strives for continuous improvement in customer satisfaction. MSA is proud of the service provided to our North American customers via our Customer Service Center. Every year brings positive changes: better-trained representatives with more advanced computer programs, resulting in improved service and faster solutions. Each Customer Service Rep's computer workstation can simultaneously handle a variety of applications, and an automated call distributor monitors and routes call flow to ensure peak performance. The CSC continues to look for ways to improve our relationship with customers via input from sales personnel and field customers themselves. We're aiming for TOTAL customer satisfaction!

Ask us the name of your nearest authorized MSA distributor, who can:
• Place your orders
• Obtain prices and quotes
• Provide product information and technical assistance
• Check delivery and expedite shipments
• Order catalogs and product literature
• Obtain return authorizations

Great International Sales

MSA's international sales capabilities start with MSA Sales Representatives who assist in choosing the right products for your applications and local approvals. Our extensive network of distributors, representatives and MSA-affiliate companies covers most major cities worldwide. Highly-trained international customer service representatives guide your export orders from placement to delivery. MSA uses all major air and ocean freight forwarders and courier services due to their ability to consolidate multiple orders and minimize freight expenses. Our CSRs understand international inspections, certifications, licensing and other customs issues necessary for successful importation.

To contact MSA International or to find the MSA affiliate company or distributor nearest you, please contact MSA International:

Toll-free in the U.S.:	1-800-MSA-7777
Outside the U.S.:	(+1) 412-967-3354
FAX:	(+1) 412-967-3451
Email:	International@MSAnet.com

To reach our Customer Service Center:

Toll-free:	1-800-MSA-2222
	1-800-MSA-5555 (after-hours emergencies)
FAX:	1-800-967-0398
MSA Voice Mail System:	1-800-759-6423
Mailing Address:	Customer Service Center
	MSA World Headquarters
	P.O. Box 426
	Pittsburgh, PA 15230-0426

Respirators: APR & SAR

Key Elements of a Sound Respiratory Protection Program

The fundamental goal of any respiratory protection program is to control occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, and/or vapors. The defense against these contaminants is simple: Keep them out of the air that workers breathe. Always implement engineering and/or administrative controls first. If contaminants still present a hazard, you must provide appropriate respiratory protection for every employee who might be exposed to them.

MSA can help you take a comprehensive approach to sound Respiratory Protection practices. This guide will help you understand the need for respirators, how they work, and what their limitations are.

OSHA (the Occupational Safety and Health Administration) and NIOSH (the National Institute of Safety and Health) regulations define all the specific requirements which must be followed, including the capabilities of appropriate respiratory protection. Employers must follow the requirements of these governmental regulations, both the general regulations which apply to all workplaces and the specific regulations for exposures in their particular industry, such as lead, silica dust, asbestos, and benzene.

A Written Respiratory Protection Program **1**

Administration

The first step in a respiratory protection program is to establish written standard operating procedures governing the selection and use of respirators. Regular inspection and evaluation of the program will ensure its continued effectiveness.

According to OSHA, a written program will help employers, employees, and compliance officers gauge the adequacy of a given program. When developing your written respiratory protection program, be sure to include the following elements, designated by 29 CFR Part 1910.134:

- Procedures for selecting respirators for use in the workplace
- Fit-testing procedures for tightfitting respirators (including a signed copy of employees' fit-test records)
- Procedures for proper use of respirators in routine and emergency situations
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, and repairing respirators
- Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmospheresupplying respirators
- Medical evaluations of employees required to wear respirators

Employers must:
- Submit a written respiratory protection program unless the choice of voluntary respiratory protection is a filtering facepiece (dust mask)
- Provide voluntary respirator users with Appendix D (p. 1284) of the Standard
- Ensure that employees using a respirator voluntarily have medical clearance

Employees must clean, store, and maintain the respirator so that its use does not present a health hazard.

Voluntary Respirator Use

An employer must provide respiratory protection for employees who ask for it or let employees use their own respiratory protection, if such respirator use will not create a hazard. Fit testing is not required for voluntary use.

If possible, one person should administer these procedures, to ensure consistent coordination and direction and optimum results. The actual respiratory protection program itself for each workplace depends upon many factors, and may require input from specialists such as safety personnel, industrial hygienists, health physicists and physicians.

Respiratory Hazards

Before a respiratory protection program is initiated, it is important to first understand the types of respiratory hazards inherent to your industry. Of the three normally recognized ways toxic materials can enter the body—through the (1) gastrointestinal tract, (2) skin, and (3) lungs—the respiratory system presents the quickest and most direct avenue of entry. This is because of the respiratory system's direct relationship with the circulatory system and the constant need to oxygenate tissue cells to sustain life.

The three basic classifications of respiratory hazards are:
- oxygen-deficient air
- particulate contaminants;
- gas and vapor contaminants.

The 7 Key Elements

Chances are that you are already familiar with the need for and use of respirators in your workplace, but as with anything else, it doesn't hurt to review your current program against standard operating procedures governing the selection and use of respirators. According to program details in OSHA's Respiratory Protection Standard (29 CFR 1910.134), the seven key elements that every respiratory protection program should contain are:

1. A **written plan** detailing how the program will be administered

2. A **complete assessment** and knowledge of respiratory hazards that will be encountered in the workplace

3. **Procedures and equipment** to control respiratory hazards, including the use of engineering controls and work practices designed to limit or reduce employee exposures to such hazards

4. Guidelines for the **proper selection** of appropriate respiratory protective equipment

5. An **employee training program** covering hazard recognition, the dangers associated with respiratory hazards, and proper care and use of respiratory protective equipment

6. **Inspection, maintenance, and repair** of respiratory protective equipment

7. **Medical surveillance** of employees

Oxygen Deficiency

Normal ambient air contains an oxygen concentration of 20.8% by volume. When the oxygen level dips below 19.5%, the air is considered oxygen-deficient. Oxygen

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concentrations below 16% are considered unsafe for human exposure because of harmful effects on bodily functions, mental processes, and coordination.

It is important to note that life-supporting oxygen can be further displaced by other gases, such as carbon dioxide. When this occurs, the result is often an atmosphere that can be dangerous or fatal when inhaled. Oxygen deficiency also can be caused by rust, corrosion, fermentation, or other forms of oxidation which consume oxygen. The impact of oxygen-deficiency can be gradual or sudden.

Particulate Contaminates

Particulate contaminants can be classified according to their physical and chemical characteristics and their physiological effect on the body. The particle diameter in microns (1 micron = 1/25,400 inch) is of utmost importance. Particulates below 10 microns in diameter have a greater chance to enter the respiratory system, and particles below 5 microns in diameter are more apt to reach the deep lung or alveolar spaces.

In healthy lungs, particles from 5 to 10 microns in diameter are generally removed from the respiratory system by a constant cleansing action that takes place in the upper respiratory tract. However, with excessive "dust" exposures or a diseased respiratory system, the efficiency of the cleansing action can be significantly reduced.

The various types of airborne particulate contaminants can be classified as follows:

Fumes—An aerosol created when solid material is vaporized at high temperatures and then cooled. As it cools, it condenses into extremely small particles—generally less than 1 micron in diameter. Fumes can result from operations such as welding, cutting, smelting, or casting molten metals.

Dusts—An aerosol consisting of mechanically produced solid particles derived from the breaking up of larger particles. Dusts generally have a larger particle size when compared to fumes. Operations such as sanding, grinding, crushing, drilling, machining, or sand blasting are the worst dust producers. Dust particles are often found in the harmful size range of 0.5 to 10 microns.

Mists— An aerosol formed by liquids, which are atomized and/or condensed. Mists can be created by such operations as spraying, plating, or boiling, and by mixing or cleaning jobs. Particles are usually in the size range of 5 to 100 microns.

Gas and Vapor Contaminants

Gas and vapor contaminants can be classified according to their chemical characteristics. True gaseous contaminants are similar to air in that they possess the same ability to diffuse freely within an area or container. Nitrogen, chlorine, carbon monoxide, carbon dioxide, and sulfur dioxide are examples.

In terms of chemical characteristics, gaseous contaminants may be classified as follows:

Inert Gases —These include such true gases as helium, argon, neon, etc. Although they do not metabolize in the body, these gases represent a hazard, because they can produce an oxygen deficiency by displacement of air.

Acidic Gases —Often highly toxic, acidic gases exist as acids or produce acids by reaction with water. Sulfur dioxide, hydrogen sulfide and hydrogen chloride are examples.

Alkaline Gases —These gases exist as alkalis or produce alkalis by reaction with water. Ammonia and phosphine are two examples.

Vapors are the gaseous state of substances that are liquids or solids at room temperature. They are formed when the solid or liquid evaporates.

In terms of chemical characteristics, vaporous contaminants may be classified as follows:

Organic Compounds —Contaminants in this category can exist as true gases or vapors produced from organic liquids. Gasoline, solvents, and paint thinners are examples.

Organometallic Compounds —These are generally comprised of metals attached to organic groups. Tetraethyllead and organic phosphates are examples.

Hazard Assessment 2

Proper assessment of your specific hazard(s) is the first important step to protection. This requires a thorough knowledge of processes, equipment, raw materials, end-products, and by-products that can create an exposure hazard. First, you must make an initial determination of workplace conditions. This simple calculation of exposures does not require sampling of the environment. Factor in workplace size, ventilation, the amount of the regulated substance present, the type of operation, and the proximity of the workers to the source of emissions.

According to OSHA, personal exposure monitoring is the "gold standard" for determining employee exposure. It is the most reliable approach for assessing the level and type of respiratory protection required. Sampling which uses methods appropriate for contaminants(s) should represent the worst-case exposures or enough shifts and operations to determine the accurate range(s) of exposure.

To determine an atmosphere's oxygen content or concentration levels of particulate and/or gaseous contaminants, air samples must be taken with proper sampling instruments during all conditions of operation. The sampling device and the type and frequency of sampling (spot testing or continuous monitoring) will be dictated by the exposure and operating conditions.

Breathing zone samples are recommended and sampling frequency should be sufficient to assess the average exposure under the variable operating and exposure conditions.

Should contaminant concentrations exceed exposure limits recommended by the American Conference of Governmental Industrial Hygienists (ACGIH), OSHA, or NIOSH, hazard control procedures must be implemented promptly.

OSHA emphasizes that, because workplaces differ, each respirator program must be tailored to the specific conditions of the workplace. The recently revised OSHA standard serves as

a "building block standard", because it consolidates respiratory protection provisions that previously were included in sections dealing with specific chemical substances.

The employer is required to evaluate respiratory hazards in the workplace, identify relevant workplace and use factors, and base respirator selection on these factors.

Exposure Monitoring

Exposure monitoring plays a critical role in the respirator selection process. The results from such testing will help you determine whether respiratory protection is needed and, if it is, the type of respirator that is required. Generally, respirator selection is based on three factors:

• The results of your atmospheric monitoring or sampling program
• The accepted ACGIH, OSHA, or NIOSH exposure limits for the substance(s) present
• The maximum use concentration (of a substance) for which a respirator can be used

Exposure limits include:

ACGIH Threshold Limit Values (TLVs)

OSHA Permissible Exposure Limits (PELs)

NIOSH-Recommended Exposure Levels (RELs)

AIHA Workplace Environmental Exposure Levels (WEELs) These values are guides for exposure concentrations that healthy individuals can normally tolerate for eight hours a day, five days a week, without harmful effects. Unless otherwise noted, exposure limits are eight-hour, time-weighted-average (TWA) concentrations.

In general, gas and vapor exposure limits are expressed in ppm by volume (parts of contaminant per million parts of air), while particulate concentrations are expressed as mg/m3 (milligrams of concentrations per cubic meter of air). For substances that can exist in

more than one form (particulate or gaseous), concentrations are expressed in both values.

IDLH (Immediately Dangerous to Life or Health) characterizes an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

It is important to note that exposure limits and other exposure standards are constantly changing as more data is gathered about specific chemicals and substances. As such, you must be certain that you are using the most recent data when determining allowable exposure levels for employees.

Hazard Control 3

Hazard control should start at the process, equipment, and plant design levels where contaminants can be controlled effectively at the outset.With operating processes, the problem becomes more difficult. In all cases, however, attention should be given to the use of effective engineering controls to eliminate and/or reduce exposures to respiratory hazards. This includes consideration of process encapsulation or isolation; use of less toxic materials in the process' and suitable exhaust ventilation, filters, and scrubbers to control the effluents.

Because it is sometimes not practical to maintain engineering controls that eliminate all airborne concentrations of contaminants, proper respiratory protective devices should be used whenever such protection is required.

Respirator Selection 4

All respirators in use must be NIOSH-approved (NIOSH 42 CFR Part 84). Selecting respirators entails knowing what level of respiratory protection employees need, as well as which size respirator is right for any face and facial contours.

Respiratory protective devices vary in design, application, and protective capability. Thus, the user must assess the inhalation hazard and understand the specific use limitations of available equipment to assure proper selection.

If your calculation shows that exposure concentrations exceed recommended limits and engineering/administrative controls do not reduce exposure below the permissible limit, tailor your respiratory protection program to your specific conditions based on:
- Toxicity (TLV or TWA)
- Maximum Expected Concentration
- Oxygen level

- IDLH concentration
- Warning properties (adequate or not)
- Sorbent limitations
- Facepiece fit
- Mobility requirements
- Type of use (routine, escape, or emergency entry)

Types of Respirators

Respirators fall under two classifications: **air-purifying** and **air-supplied**. Air-purifying respirators are used against particulates, gases, and vapors. These are categorized as negative-pressure respirators that use chemical cartridges and/or filters; gas masks; and positive-pressure units such as powered air-purifying respirators (PAPRs). Air-supplied devices rely on a primary air source to deliver a steady flow of respirable air to the user's facepiece. These consist of Self-Contained Breathing Apparatus (SCBA) and air-line devices.

Air-Purifying Respirators (APRs) range from simple disposable cup masks to low-maintenance halfmask facepieces with cartridges and/or filters to the more complex PAPRs with full- facepieces, or hoods.
- APRs for particulates use filters to capture dusts,mists, and fumes. Filters do not protect against gases or vapors, and generally become less effective as particles accumulate on the filter and plug spaces between the fibers. Filtering APRs require filter replacement when the user finds it difficult to breathe through them.
- Gas and vapor APRs employ chemical cartridges or canisters to remove hazardous gases or vapors from the air. They do not protect against airborne particles. Made to protect against specific gases or vapors, they provide protection only as long as the cartridge's absorbing capacity is not depleted.

The service life of a chemical cartridge depends upon many factors and can be estimated in various ways. Cartridges and canisters require an end-of-service-life indicator (ESLI) or a change

schedule, based on objective information or data that will ensure that canisters and cartridges are changed before the end of their useful life. In the respirator program, the employer must describe the information and data relied upon and the basis for the canister and cartridge change schedule as well as the basis for reliance on the data.
- Combination APRs, fitted with both particulate filters and gas/vapor cartridges, are worn in atmospheres that contain hazards of both particulates and gases.

Supplied-Air Respirators (SARs), comprise air-line respirators, SCBA, and combination (supplied-air) respirators.
- Air-Line Respirators are used for extended periods in non-IDLH atmospheres. They use an air-line hose to deliver clean breathing air from a stationary source of compressed air for prolonged periods of time. Although comparatively lightweight, air-line respirators can limit users' mobility because of the air-line hose that must be attached.
- Self-Contained Breathing Apparatus (SCBA) have an open-circuit design that provides air rated for 30 to 60 minutes. They consist of a wearable, clean-air supply and a tight-fitting facepiece, and are used for shortduration entrance or escape from atmospheres that are or may be IDLH. They offer relatively unrestricted movement.
- Combination SARs are air-line devices used for extended work periods in atmospheres that are or may be IDLH. They have an auxiliary self-contained air cylinder that can be used if the primary air supply fails. The air cylinder can also be used for entry into or escape from IDLH atmospheres, such as confined spaces.

Employers are required to provide employees using SARs with breathing gases of high purity, and ensure that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration is in accordance with the specifications of OSHA Standard 1910.134(i).

Training 5

For proper use of any respiratory protection device, it is essential that the user be properly instructed in its selection, use, and maintenance. Both supervisors and workers must be so instructed by competent persons.

Minimum training must include:
- Methods of recognizing respiratory hazards
- Instruction in the hazards and an honest appraisal of what could happen if the proper respiratory protection device is not used
- Explanation of why more positive control is not immediately feasible. This must include recognition that every reasonable effort is first being made to reduce or eliminate the need for respiratory protection
- A discussion of why various types of respiratory protection devices are suitable for particular purposes

- A discussion of the device's capabilities and limitations
- Instruction and training in actual use of respiratory protection equipment, and definite and frequent supervision to assure that it continues to be properly used
- Classroom and field training to recognize and cope with emergency situations

Before an employee may be required to use any respirator with a negative- or positive-pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.

Training should provide personnel with an opportunity to handle the device, have it fitted properly, test its face-to-facepiece seal,wear it in normal air for a long familiarity period, and, finally, wear it in a test atmosphere. OSHA requires fit tests to ensure proper fit for workers who use respirators.

Fit Testing

OSHA requires fit testing for any face mask (full or half) designed to have a tight seal along the face, whether it is used in a positive- or negative-pressure mode, and whether it is disposable or not.

Qualitative fit test methods are subjective in nature and rely on the judgment of the test subject. They are essentially a pass/fail fit test to assess the adequacy of respirator fit.

Quantitative testing methods rely on objective data to determine a proper fit. An assessment of the adequacy of respirator fit is determined by numerically measuring the amount of leakage into the respirator.

If the required fit factor is greater than 100, i.e., when higher levels of respiratory protection are needed, quantitative fit-testing must be conducted. Most experts agree that quantitative fit-testing provides the most accurate information, because it uses actual test data, rather than depending on the respirator wearer's sense of smell and taste (subjective responses).

OSHA requires these eight exercises for both qualitative and quantitative fit testing:

1–normal breathing

2–deep breathing

3–head side to side

4–head up and down

5–talking out loud

6–grimacing (quantitative only)

7–bending

8–normal breathing

Respirator Care 6

Proper inspection, maintenance, and repair of respiratory protective equipment are mandatory to ensure success of any respiratory protection program. The goal is to maintain the equipment in a condition that provides the same effectiveness as it had when it was first manufactured.

All equipment must be inspected before and after each use. A record of all inspections by date must be kept, with the results tabulated. It is important to follow the recommendations of the manufacturer precisely.

All non-disposable respiratory protective equipment must be cleaned and decontaminated after each use. Disposable respirators and accessories should be discarded after each use, and replaced with identical new respirators.

Replacement of other than disposable parts must be done only by personnel with adequate training to ensure that the equipment is functioning properly after the work is accomplished. Only parts supplied by the manufacturer for the product being repaired must be used.

Medical Surveillance 7

According to OSHA,"using a respirator may place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions in which the respirator is used, and the medical status of the employee." Employers must determine an employee's ability to use a respirator.

Workers should never be assigned to any operation requiring respiratory protection until a physician has determined that they are capable— physically and psychologically— to perform the work using the respiratory protective equipment.

Program Evaluation

Employers are required to conduct periodic evaluations of the workplace to ensure that the written respiratory protection program is being properly implemented, and to consult employees to ensure that they are using the respirators properly. The employer must regularly consult employees required to use respirators to assess the employees' views on program effectiveness and to identify any problems. Any problems that are identified during this assessment must be corrected.

Factors to be assessed include, but are not limited to:
- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance)
- Appropriate respirator selection for the hazards to which the employee is exposed
- Proper respirator use under the workplace conditions the employee encounters
- Proper respirator maintenance

Record Keeping

Employers must retain written information regarding medical evaluations, fit testing, and the respirator program. This information will facilitate employee involvement in the respirator program, assist the employer in auditing the adequacy of the program, and provide a record for compliance determinations by OSHA.
- Records must be kept on:
- Medical evaluation
- Qualitative and Quantitative Fit Tests, which are retained until the next fit test is administered
- Employee identity
- Make, model, style, and size of respirator tested
- Date of test
- Results
- Written copy of the current respirator program

Although instituting a sound respiratory protection program will take effort and financial investment, the objective of a such a program is sound—ensuring that every worker is protected against potentially fatal diseases.

Important

This article is intended to help employers understand the respiratory protection requirements of OSHA and NIOSH government standards, and is not intended to be the sole guide for complying with 29 CFR Part 1920.134 (OSHA) and 42 CFR Part 84 (NIOSH). These government documents may be found in their entirety on the Internet at: www.osha.gov www.cdc.gov/niosh/part84

Advantage® 200 LS Respirators

Advantage 200 LS Respirator with combination chemical cartridges

The Advantage 200 LS Respirator's Lighter and Softer facepiece is made from a clear blue formulation of thermoplastic rubber to give workers more comfort and stability than ever.

Extensive anthropometric research led to the Advantage Respirator's unique design. MSA's engineers examined facial form data of over 8,000 people and, with CAD technology, developed the AnthroCurve™ Sealing Surface, which instantly conforms to each wearer's unique facial characteristics.

The unmatched fit and comfort start with a soft, pliable combination of rubber and plastic that provide a virtually customized fit. These are key components in the patented MultiFlex® System that equalizes pressure on the faceseal area, while delivering exceptional stability, so the respirator will not collapse during wear.

For more information, see Bulletin 1012-10.

Advantage 200 LS Facepieces*

Description	2-Piece Neckstrap	Single Neckstrap
Advantage 200 LS, small	815696	815448
Advantage 200 LS, medium	815692	815444
Advantage 200 LS, large	815700	815452

Advantage 200 LS Facepiece and Cartridge Kits

Complete with Chemical Cartridges and Filters.

Description	OV-N95 Cartridge	Multigas R95 Cartridge
Advantage 200 LS, small	816943	816701
Advantage 200 LS, medium	816939	816697
Advantage 200 LS, large	816947	816705

* See pages 11–12 for Advantage filters and cartridges.

Comfo® Cartridge† Adapter for Advantage Respirators

Advantage Adapter, pkg of 2	809999

†See page 14 for threaded Comfo filters and cartridges.

Advantage Fit Test Adapter

Easy to use!

Advantage Fit Test Adapter	10056424

Advantage 200LS Respirator with Flexi-Filter Pads

Free!

Advantage Technical Support CD

Instant information about MSA's Advantage 200 LS and 3000 Respirators

- Single source for care & use information, instruction manuals, fit-testing forms, parts lists and cartridge information
- Enhances your use of MSA's lighter, softer half-mask and optically correct, comfortable full-face respirators
- Convenient, immediate, paperless retrieval
- Easy-to-use, interactive format
- Multi-lingual English/Spanish
- Call MSA Customer Service for your **FREE** copy!

Advantage® 3000 Respirators

The Advantage 3000 Full-Face Respirator incorporates MSA's global engineering expertise and is designed to meet NIOSH and EN standards.

The respirator features a wraparound lens combined with a soft, pliable silicone facepiece that provides a total solution to your air-purifying respirator needs.

Its fit technology is based on the proven faceseal of the Ultra Elite Facepiece, which was based on facial measurements from more than 8,000 people.

For the utmost in convenience, the Advantage 3000 uses the same cartridges and filters as the Advantage 200 LS Respirator.

The Advantage 3000 Respirator enhances worker performance through a new design that allows even lower breathing resistance and includes a standard nosecup that reduces fogging in low temperatures or high humidity conditions.

In addition, the facepiece lens has a scratch resistant coating and has been engineered to be optically correct, giving you superior visibility and peripheral vision. The Advantage 3000 Respirator meets all performance requirements of ANSI Z87.1.2003 (protective eye and face protection).

Donning the mask is made easier with pre-adjustable rubber straps. With the Advantage 3000 Respirator, you can set the position of the upper straps to receive a consistent fit, time after time. In addition, the preset upper straps prevent uncomfortable snags during donning and doffing, and also provide a tighter, more secure seal. Wearers also can choose the new European-style Advantage harness, which dons like a catcher's mask.

For more information, see Bulletin 1012-10.

Advantage 3000 Respirator*

Advantage 3000 Facepieces

Description	Small	Medium	Large
Advantage 3200 Twin Port Respirator, w/rubber harness	10028996	10028995	10028997
Advantage 3200 Twin Port Respirator, w/Advantage European-style harness	10031340	10031309	10031341

Spectacle Kits for Full-Facepiece Respirators

For use by workers who must wear corrective lenses.	
Spectacle Kit for Advantage 3000	10029298

Cover Lens for Advantage 3000

This clear, flexible cover lens protects the facepiece lens from scratches during storage, handling & use.	
Cover Lens Clear, box of 25	10031542
Cover Lens Smoke, box of 25	10031543

* See pages 11–12 for Advantage filters and cartridges.

Advantage Fit Test Adapter

Easy to use!

Advantage Fit Test Adapter	10056424

Advantage 3000 Respirator with rubber harness

Advantage 3000 Respirator with European-style harness

Free!

Advantage Technical Support CD

Instant information about MSA's Advantage 200 LS and 3000 Respirators

• Single source for care & use information, instruction manuals, fit-testing forms, parts lists and cartridge information
• Enhances your use of MSA's lighter, softer half-mask and optically correct, comfortable full-face respirators
• Convenient, immediate, paperless retrieval
• Easy-to-use, interactive format
• Multi-lingual English/Spanish
• Call MSA Customer Service for your **FREE** copy!

Advantage® 4000 Respirators

NEW!

The new Advantage 4000 Twin Port Full-Face Respirator raises the performance of industrial full-facepiece respirators to a new level. Based on the Advantage 3000 Facepiece, the respirator features a wraparound lens combined with a soft, pliable Hycar or silicone facepiece that provides a total solution to your air-purifying needs.

Its fit technology is based on the proven face seal of the Ultra Elite Facepiece. For the utmost in convenience, the Advantage 4000 uses the same cartridges and filters as the Advantage 200 LS and Advantage 3000 Respirator.

In addition, the facepiece lens has scratch-resistant coating and has been engineered to be optically correct, giving you superior visibility and peripheral vision. The Advantage 4200 Respirator also meets the performance requirements of ANSI Z87.1.2003.

The Advantage 4000 Respirator enhances worker performance through a new design that allows low breathing resistance and includes a standard nosecup that reduces fogging in low temperatures or high humidity conditions.

Options include spectacle kits for corrective lenses, cover lens and welders adapter.

Donning the mask is made easier with a comfortable net-type harness with a four-point adjustable suspension. Wearers also can choose pre-adjustable rubber straps.

Advantage 4000 Respirator*

Advantage 4000 Facepieces

Description	Small	Medium	Large
Advantage 4200 Twin Port Respirator, w/net head harness, Hycar	10083785	10083781	10083789
Advantage 4200 Twin Port Respirator, w/rubber head harness, Hycar	10083787	10083783	10083791
Advantage 4200 Twin Port Respirator, w/net head harness, silicone	10083784	10083760	10083788
Advantage 4200 Twin Port Respirator, w/rubber head harness, silicone	10083786	10083782	10083790

Spectacle Kits for Full-Facepiece Respirators

For use by workers who must wear corrective lenses.	
Spectacle Kit for Advantage 4000	10029298

Cover Lens for Advantage 4000

This flexible cover lens protects the facepiece lens during storage, handling and use.	
Cover Lens Clear, box of 25	10031542
Cover Lens Smoke, box of 25	10031543

Welders Adapter

Clip-On Welders Adapter for Advantage 4000 Twin Port Facepiece, with cover lens, less filter plate	10065328

* See pages 11–12 for Advantage filters and cartridges.

Advantage 4000 Respirator with Welder's Adapter, Filter Plate and Flexi-Filter Pads

Advantage® 1000 Respirators

The Advantage 1000 Full-Face Respirator features a wraparound flexible lens that offers excellent fit and comfort with increased vision. It weighs 40% less than conventional full-face respirators and uses the same cartridges as the Advantage Family Respirators†.

The Advantage 1000 Respirator is constructed of super-soft Hycar™ rubber that provides the feel and comfort of silicone but has better permeation resistance. The facepiece, which is available in three sizes, has a unique inturned lip seal that provides an exceptional seal against a wide range of facial contours. The Advantage 1000 facepiece also features a distinctive, flexible urethane lens that is integrally bonded to the facepiece, eliminating the need for rigid lens retainers that can cause unwanted pressure points.

Standard equipment includes a speaking diaphragm, for clear, short-range communications, and a nosecup, to reduce lens fogging in low temperatures or high-humidity conditions.

Advantage 1000 Facepieces

	Small	Medium	Large
Black, with speaking diaphragm and nosecup	805414	805408	805420

Advantage 1000 Respirator Accessories

Flexible Cover Lens for Advantage 1000

Protects the facepiece lens from scratches during storage, handling, and use.

Advantage 1000 Cover Lens, clear, box of 25	813832

Lens Shield for Advantage 1000

For added impact protection, a polycarbonate lens shield snaps into place. For nuclear personnel, the lens shield provides an additional level of eye protection and increased beta-radiation protection.

Clear Lens Shield, small	806463
Clear Lens Shield, medium/large	806462
Tinted Lens Shield, small	806465
Tinted Lens Shield, medium/large	806464

ESP® II Communication System

A one-piece, self-contained electronic speech projection device that allows wearers to speak normally, yet be heard loud and clear. Also fits Millennium Gas Mask.

ESP II Communication System for Advantage 1000 and Millennium Masks	10026265

Flexi-Filter® Pads for Advantage Respirators

These low-profile, flexible pads fit well under a welding hood and with other personal protective equipment. They offer great balance and weight distribution for maintaining a good face seal, while their swept-back design provides improved vision and comfort.

Filter Type & Efficiency

See **Definitions** below

MSA Filter Description	Part No.	Color Coding	P100	P95	N95	See Notes below
Flexi-Filter P100	818342	▮ (pink)	☑			1,4
Flexi-Filter P100 w/Nuisance Level OV, Ozone Removal	818343	▮ (pink)	☑			1,4
Flexi-Filter P100 w/Nuisance Level AG, HF Removal	818344	▮ (pink)	☑			1,4
Flexi-Filter N95	818346	▮ (black)			☑	1
Flexi-Filter N95 w/Nuisance Level OV Removal	818347	▮ (black)			☑	1
Flexi-Filter P95	818354	▮ (black)		☑		1
Flexi-Filter P95 w/Nuisance Level OV Removal	818355	▮ (black)		☑		1
Flexi-Filter P95 HF Removal (NIOSH)	10063227	▮ (olive)		☑		1

Definitions

N95-Particulate Filter (95% filter efficiency level) effective against particulate aerosols free of oil; time use restrictions may apply.

P95-Particulate Filter (95% filter efficiency level) effective against all particulate aerosols.

P100-Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

Notes

1. Do not use in atmospheres containing less than 19.5 percent oxygen, in atmospheres containing gases or vapors or in atmospheres immediately dangerous to life and health.
2. Do not use in atmospheres containing less than 19.5 percent oxygen, or in atmospheres immediately dangerous to life and health.
3. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with the sorbent material in the cartridge.
4. 99.97 percent efficient against 0.3 micron DOP.

Flexi-Filter HF filter

NIOSH Approved P95 HF

For more information, see Bulletin 1012-08.

Advantage® Respirator Cartridges

The Advantage line of particulate, chemical and combination cartridges is NIOSH-approved (to 42 CFR, Part 84) and provides lightweight, low-profile performance. Cartridges fit both 200 LS Half-Mask and 3000 Full-Facepiece Advantage Respirators.

MSA Cartridge Description	Re-Order Part Number	Color Coding	Organic Vapor — OV	Acid Gases — Chlorine — CL	Acid Gases — Sulfur Dioxide — SD	Acid Gases — Chlorine Dioxide — CD	Acid Gases — Hydrogen Chloride — HC	Acid Gases — Hydrogen Sulfide* — HS*	Ammonia — AM	Methylamine — MA	Formaldehyde — FM	Hydrogen Fluoride — HF	Mercury Vapor — MV	P100	R95	N95	See Notes below
GMA	815355		✓														2,3
GMA with N95 Prefilter	815355 with 815394 or 816357		✓													✓	2,3
GMA with R95 Prefilter	815355 with 815397		✓												✓		2,3
GMA P100	815362		✓											✓			2,3,4
GMB	815356			✓	✓	✓	✓	✓									2
GMB with N95 Prefilter	815356 with 815394 or 816357			✓	✓	✓	✓	✓								✓	2
GMB with R95 Prefilter	815356 with 815397			✓	✓	✓	✓	✓							✓		2
GMB P100	815363			✓	✓	✓	✓	✓						✓			2,4
GMC	815357		✓	✓	✓	✓	✓	✓									2,3
GMC with N95 Prefilter	815357 with 815394 or 816357		✓	✓	✓	✓	✓	✓								✓	2,3
GMC with R95 Prefilter	815357 with 815967		✓	✓	✓	✓	✓	✓							✓		2,3
GMC P100	815364		✓	✓	✓	✓	✓	✓						✓			2,3,4
GMD	815358								✓	✓							2,3
GMD with N95 Prefilter	815358 with 815394 or 816357								✓	✓						✓	2,3
GMD with R95 Prefilter	815358 with 815397								✓	✓					✓		2,3
GMD P100	815365								✓	✓				✓			2,3,4
GME	815359		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				2,3
GME with N95 Prefilter	815359 with 815394 or 816357		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	2,3
GME with R95 Prefilter	815359 with 815397		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		2,3
GME P100	815366		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			2,3,4
GMI P100**	815641		✓											✓			2,4
Mersorb	815361			✓									✓				2,4
Mersorb with N95 Prefilter	815361 with 815394 or 816357			✓									✓			✓	2,4
Mersorb with R95 Prefilter	815361 with 815397			✓									✓		✓		2,4
Mersorb P100	815368			✓									✓	✓			2,4
Low-Profile P100	815369													✓			1,4
N95 Snap-On Prefilter and Cover	815394 Pack of 10 / 816357 Box of 50 / 815392 Reusable Snap-On Cover 2 in a Package																
R95 Snap-On Prefilter and Cover	815397 Box of 20 / 815401 Reusable Snap-On Cover 2 in a Package																

⚠ WARNING

An appropriate cartridge change-out schedule must be developed by a qualified professional, unless the cartridge/canister utilizes an end-of-service-life indicator. The change-out schedule must take into account all factors that may influence respiratory protection including specific work practices and other conditions unique to the worker's environment. If using against substances having poor warning properties, there is no secondary means of knowing when to replace the cartridges/canister. In such cases, take appropriate additional precautions to prevent overexposure, which may include a more conservative change-out schedule or using an air-supplied respirator or SCBA. Failure to follow this warning can result in serious personal injury or death. As a reference, below is a partial list of substances having poor warning properties:

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

Definitions
N95-Particulate Filter (95% filter efficiency level) effective against particulate aerosols free of oil; time use restrictions may apply.

R95-Particulate Filter (95% filter efficiency level) effective against all particulate aerosols; time use restrictions may apply.

P100-Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

* Escape only.
** Effective against, but not NIOSH-approved for Iodine Vapor.

Notes
1. Do not use in atmospheres containing less than 19.5 percent oxygen, in atmospheres containing gases or vapors or in atmospheres immediately dangerous to life and health.
2. Do not use in atmospheres containing less than 19.5 percent oxygen, or in atmospheres immediately dangerous to life and health.
3. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with the sorbent material in the cartridge.
4. 99.97 percent efficient against 0.3 micron DOP.

Comfo Classic® and Comfo Elite® Respirators

The **Comfo Classic Respirator** features SoftFeel® facepiece material, which is an MSA-exclusive formulation that improves pliability and softness. Like earlier Comfo respirator models, the Comfo Classic Respirator features a unique face seal design that gives wearers an exceptional fit.

The **Comfo Elite Respirator** provides protection against a variety of respiratory hazards. The Comfo Elite Respirator, available in black silicone, has a unique sealing surface designed to reduce facepiece slippage. The Comfo Elite Respirator comes in small, medium, and large sizes. NIOSH-certified.

Comfo Classic Respirator

Material	Color	Small	Medium	Large
SoftFeel Hycar	Black	808075	808074	808076
SoftFeel silicone	Black	808072	808071	808073

Comfo Elite Respirator

Material	Color	Small	Medium	Large
Silicone	Black	490492	490491	490493

Ultra-Twin® Respirators

The **Ultra-Twin Full-Facepiece Respirator** has an inturned lip around the edge for a secure, comfortable seal against the face. A large chin cup makes it easy to position. Five suspension headstraps and roller buckles hold the facepiece in place while minimizing hair entanglement. The wide polycarbonate lens is coated to resist scratching and chemical attack. The lens is held in place by a two-piece lens ring which is color-coded to indicate the size of the facepiece. Uses the full line of Comfo Cartridges and Filters.†

Standard equipment includes a speaking diaphragm for clear, short-range communications and a nosecup, to reduce lens fogging in low temperatures or high-humidity conditions.

Ultra-Twin Respirator

Material	Color	Small	Medium	Large
Hycar	Black	471298	471286	471310
Silicone	Black	480263	480259	480267

Ultra Elite® Twin-Cartridge Respirators

The demand version of the **Ultra Elite Facepiece** from MSA can be used as a twin-cartridge air-purifying respirator for full-face respiratory protection. The unique lens design provides a high level of peripheral and downward vision. It is available in three sizes and has large adjustment tabs for easy donning and doffing. Choose one of two facepiece materials—SoftFeel® Hycar rubber or silicone—to enhance wearer comfort. A speaking diaphragm in front of the wearer's mouth improves communication so that speech is not blocked. A nosecup reduces lens fogging in low temperatures or high-humidity conditions.

†See page 14 for threaded Comfo filters and cartridges.

Ultra Elite Facepiece

With Twin-Cartridge Adapter

Material	Color	Small	Medium	Large
SoftFeel silicone	Black	10016755	10016756	10016757

Less Twin-Cartridge Adapter

Material	Color	Small	Medium	Large
SoftFeel Hycar rubber	Black	493064	493020	493108
SoftFeel silicone	Black	493072	493028	493116

Note: Ultra Elite Facepieces must be fitted with a Twin-Cartridge Adapter to be used as a twin-cartridge respirator.

Twin-Cartridge Adapter

Converts demand Ultra Elite or Ultravue facepieces to twin-cartridge respirators.

Twin-Cartridge Adapter for Ultra Elite/Ultravue Facepieces	803622

Comfo® Respirator Cartridges

The Comfo line of particulate, chemical and combination cartridges is NIOSH-approved (to 42 CFR, Part 84). Cartridges fit Comfo Classic, Comfo Elite, Ultra-Twin, Ultra Elite Twin-Cartridge and Duo-Twin Respirators.

MSA Cartridge Description	Re-Order Part Number	Color Coding	Organic Vapor OV	Chlorine CL	Acid Gases Sulfur Dioxide SD	Acid Gases Chlorine Dioxide CD	Acid Gases Hydrogen Chloride HC	Acid Gases Hydrogen Sulfide* HS*	Ammonia AM	Methylamine MA	Formaldehyde FM	Hydrogen Fluoride HF	Mercury Vapor MV	Filter Type & Efficiency P100	R95	N95	See Notes below
GMA (OV)	464031 (10 in pkg.)	black	✓												✓ with R95	✓ with N95	2,3
GMA P100	815178 (6 in pkg.)	black/magenta	✓											✓			2,3,4
GMA P100 Short Stack	815186 (6 in box)	black/magenta	✓											✓			2,3,4
GMB (AG)	464032 (10 in box)	white			✓	✓	✓	✓							✓ with R95	✓ with N95	2
GMB P100	815179 (6 in box)	white/magenta			✓	✓	✓	✓						✓			2,4
GMC (OV/AG)	464046 (10 in pkg.)	orange	✓	✓	✓	✓	✓	✓							✓ with R95	✓ with N95	2,3
GMC P100	815180 (6 in box)	orange/magenta	✓	✓	✓	✓	✓	✓						✓			2,3,4
GMC P100 Short Stack	815188 (6 in box)	orange/magenta	✓	✓	✓	✓	✓	✓						✓			2,3,4
GMD	464033 (10 in box)	green							✓	✓					✓ with R95	✓ with N95	2,3
GMD P100	815181 (6 in box)	green/magenta							✓	✓				✓			2,3,4
GME (Multigas)	492790 (10 in box)	olive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓ with R95	✓ with N95	2,3
GME P100	815182 (6 in box)	magenta/olive	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			2,3,4
GMI P100	815184 (6 in box)	magenta/olive	✓											✓			2,4
Mersorb®	466204 (10 in box)	WWWW		✓									✓		✓ with R95	✓ with N95	2,4
Mersorb P100	815185 (6 in box)	WWWW		✓									✓	✓			2,4
P100	815175 (10 in box)	magenta												✓			1,4
Sparkfoe® P100	815176 (10 in box)	magenta hatched												✓			1,4
Low-Profile P100	815177 (10 in box)	magenta												✓			1,4
Stand-alone and cover *N95 and covers required for Comfo Respirators*	816662 N95 (10 in pkg.) 816661 N95 (50 in box) 489353 Reusable snap-on cover (1 in pkg.; 2 req.)	gray														✓	1
Prefilter and Cover N95	816662 N95 (10 in pkg.) 816661 N95 (50 in pkg.) 489353 Reusable snap-on cover (1 in pkg.; 2 req.)	gray														✓	1
Prefilter and Cover R95	816287 R95 (20 in box) 489219 R95 Reusable snap-on cover (1 in pkg.; 2 req.)	gray													✓		1

Definitions

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R95-Particulate Filter (95% filter efficiency level) effective against all particulate aerosols; time use restrictions may apply.

P100-Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

Notes

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2. Do not use in atmospheres containing less than 19.5 percent oxygen, or in atmospheres immediately dangerous to life and health.
3. Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with the sorbent material in the cartridge.
4. 99.97 percent efficient against 0.3 micron DOP.

* Escape only.
** Effective against, but not NIOSH-approved for Iodine Vapor.

⚠ WARNING

An appropriate cartridge change-out schedule must be developed by a qualified professional, unless the cartridge/canister utilizes an end-of-service-life indicator. The change-out schedule must take into account all factors that may influence respiratory protection including specific work practices and other conditions unique to the worker's environment. If using against substances having poor warning properties, there is no secondary means of knowing when to replace the cartridges/canister. In such cases, take appropriate additional precautions to prevent overexposure, which may include a more conservative change-out schedule or using an air-supplied respirator or SCBA. Failure to follow this warning can result in serious personal injury or death. As a reference, below is a partial list of substances having poor warning properties:

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

Ultra Filter® Respirators

Ultra Filter Respirators are full-face, single-cartridge respirators designed for protection against particulate hazards, especially in the nuclear and abatement industries. The Ultra Filter Respirator uses a compact round filter cartridge that has a large effective filter area to provide low breathing resistance and high loading capacity. The Round Ultra Filter Cartridge has a P100 classification for high-efficiency protection against oil- and non-oil-containing hazards or hazard-specific standards requiring HEPA filters, such as the Lead and Asbestos Standards.

Ultra Filter Complete Assemblies		
Facepiece Size	with Hycar Rubber Facepiece	with Silicone Facepiece
Medium	10007370	10009220
Replacement Cartridge		
Round Ultra Filter Cartridge, box 6	10010420	
Round Ultra Filter Cartridge, box 50	10010421	

Air-Purifying Respirator Accessories

Cover Lens for Full Facepiece Respirators

Protects the facepiece lens from scratches during storage, handling and use.

Lens Shield for Advantage 1000

For added impact protection, a polycarbonate lens shield snaps into place. For nuclear personnel, the lens shield provides an additional level of eye protection and increased beta-radiation protection.

Cover Lens for Full Facepiece Respirators			
Color	No./Box	Facepiece	Part No.
Clear	25	Ultra Elite	491500
Smoke-tinted	25	Ultra Elite	805456
Clear	25	Ultravue	456975
Smoke-tinted	25	Ultravue	480326
Clear	25	Advantage 1000	813832
Clear	25	Advantage	10031542
Smoke-tinted	25	Advantage	10031543
Lens Shield for Advantage 1000			
Lens Color		Small	Medium/Large
Clear		806463	806462
Tinted		806465	806464

Cradle Headband Conversion Kit

For simple, snap-on replacement of elastic headstraps with a cradle headband, for Comfo Classic and Comfo II Respirators.

Cradle Headband Conversion Kit	
Cradle conversion kit	479875

Carrying Pouches

A belt-mounted carrying pouch with Velcro closures is available for half-mask respirators; a black pouch is available for Advantage 1000 Respirators.

Respirator Carrying/Storage Case

Black plastic carrying/storage case for full-facepiece respirators or other safety equipment, such as half-mask respirators, goggles, and ear muffs. Workers who store their safety equipment in car trunks, trucks, tool lockers, etc., will find this rugged case to be ideal.

Respirator Carrying Pouches and Carrying/Storage Case	
Carrying pouch for half-mask respirators	468730
Carrying pouch for Advantage 1000 Respirator, black	817040
Black plastic carrying/storage case	D2056734

Twin-Cartridge Adapter and Cartridge Adapter

The Twin-Cartridge Adapter (right) converts demand Ultravue or Ultra Elite Facepieces to twin-cartridge respirators. The Cartridge Adapter allows use of threaded Comfo Cartridges on Advantage Series Respirators.

Cartridge Adapter   *Twin-Cartridge Adapter*

Catridge Adapters	
Twin-Cartridge Adapter	803622
Cartridge Adapter, package of 2	809999

Air-Purifying Respirator Accessories

Spectacle Kits for Full-Facepiece Respirators

For use by workers who must wear corrective lenses, the Spectacle Kit can be easily inserted into the facepiece. The kit includes a wire support, rubber guide, and pair of metal-frame spectacles. Desired adjustment is obtained by moving the spectacles in and out of the rubber guide and up and down the wire support. The Advantage 1000 and the Ultravue/Ultra-Twin kits (S-7 shape, 44-mm lens size) and the Ultra Elite kit (S-7 shape, 48-mm lens size) fit Universal Bridge Corrective Lenses that can be obtained from local sources. The Spectacle Kit can be used with a nosecup. There are two kits for the Ultra Elite facepiece; one uses a side wire support to hold the lenses in the facepiece, while the other uses a center support to position the unit (spectacle adjustments are similar).

Side Support Spectacle Kit for Ultra Elite Facepiece

Center Support Spectacle Kit for Ultra Elite

Spectacle Kits	
Ultra Elite Spectacle Kit (side wire support)	804638
Ultra Elite Spectacle Kit (center support)	493581
Advantage 1000 Spectacle Kit (side wire support)	816137
Ultravue/Ultra-Twin Facepiece Spectacle Kit (side wire support)	454819

MSA Confidence Plus® Germicidal Cleaner

Mix with warm water for a germicidal cleaner that is effective against various micro-organisms including immunodeficiency virus Type 1 (HIV-1, associated with AIDS). EPA-approved for use on safety equipment.

Personal Safety Equipment Towelettes

Provides an excellent method for wiping and refreshing respirators, hardhats, and other safety equipment between full cleaning periods.

Cleaning Accessories	
Canister with 220 towelettes, 4-1/4" x 6"	697382
Box of 100 individually wrapped towelettes, 7-1/4" x 5"	697383
"The Big Ones," Box of 50 individually wrapped towelettes, 8" x 11"	10022871
MSA Confidence Plus Germicidal Cleaner, in 32 oz. bottle	10009971

Nosecup (to reduce fogging)

Molded from a soft rubber compound that is resistant to facial oils, the optional nosecup helps reduce lens fogging. The nosecup is particularly effective under conditions of high-humidity and/or low temperatures by inhibiting contact between moist exhalation and the facepiece lens. A nosecup can be easily affixed to the facepiece without tools, and any size nosecup may be installed in any size MSA facepiece, resulting in a customized facepiece for more comfortable use.

Nosecups for Ultravue/Ultra-Twin

Nosecups for Advantage 1000

Welder's Adapter for Full-Facepiece Respirators

MSA Welder's Adapters are molded of polycarbonate plastic, which has high resistance to impact, heat, and welding splatter. The clip-on adapter attaches to the facepiece by molded-in clips. The integral adapter is attached by removing the facepiece lens and replacing it with the adapter. A large vision area—4-1/2" x 5-1/4"—provides an unobstructed view of work. The Welder's Adapter is supplied with an impact-resistant cover lens; the desired filter plate is ordered separately. Rayfoe™ Filter Plates are available in four standard shades— 6, 10, 12, 14.

Welder's Adapter with AutoChange Lens

The AutoChange Electronic Welding Lens is for use with MSA Welders Adapters. The solar-powered AutoChange Welding Lens is an automatic-darkening welding filter. The welding lens is in the light state (semi-tranparent) before welding and darkens within 0.4 milliseconds after an arc is struck.

The heat-resistant Welder's Hood is designed to protect the welder's head, neck, and shoulders from welding splatter and sparks. The Kevlar hood has a rubber seal which fits snugly over the Welder's Adapter. The hood also helps protect cartridges when an air-purifying respirator is used in welding operations.

Welder's Hood with AutoChange Lens

Welder's Accessories	
Clip-On Welder's Adapter for Ultravue and Ultra Twin Facepiece; with cover lens, less filter plate	472859
Integral Welder's Adapter for Ultravue and Ultra Twin Facepiece; with cover lens, less filter plate	470786
Clip-On Welder's Adapter for Ultra Elite Facepiece; with cover lens, less filter plate	806482
Clip-On Welder's Adapter for Advantage 4200 Twin Port Facepiece; with cover lens, less filter plate	10077063
Clip-On Welder's Adapter for Advantage 4100 Single Port Facepiece; with cover lens, less filter plate	10065326
Auto-Change Electronic Welding Lens	10068601
Polycarbonate Cover Plate (4-1/2 x 5-1/4)	696095
Polycarbonate Cover Plate (2 x 4-1/4)	4791933
Rayfoe Filter Plate, shade 6, heat-treated	38346
Rayfoe Filter Plate, shade 10, heat-treated	38347
Rayfoe Filter Plate, shade 12, heat-treated	38277
Rayfoe Filter Plate, shade 14, heat-treated	38348
Cover Lens	88379
Welder's Hood, Kevlar	486328

Nosecup (to reduce fogging)			
Facepiece	Small	Medium	Large
Ultravue/Ultra-Twin, Black	813138	813139	813140
Advantage 1000, Black	806468	806466	806470

Air-Purifying Respirator Fit-Test Accessories

Facepiece Fit-Test Kits

Qualitative Test Kit

Replacement Hood & Test Solutions

Banana Oil Test Kit

The Occupational Safety and Health Administration (OSHA) requires fit tests to ensure proper fit for workers who use respirators. Quantitative testing methods rely on objective data to determine a proper fit. Qualitative fit-test methods are subjective in nature and rely on the judgment of the test subject.

Bitrex Qualitative Fit-Test Kit	
Bitrex QLFT Kit	697444
Replacement Fit-Test Solution	697446
Sensitivity Solution	697445
Replacement Hood	697448
"Using the Qualitative Fit-Test Kit" videotape	697449
Saccharin Qualitative Fit-Test Kit	
The Saccharin Qualitative Fit-Test Kit eliminates the need for special filters and is especially useful for dust/mist respirators.	
Saccharin QLFT Kit	697287
Replacement Sensitivity Test Solution, 55 ml bottle	697285
Replacement Fit-Test Solution, 55 ml bottle	697286
Replacement Hood	697448
"Using the Qualitative Fit Test Kit" videotape	697325
Banana Oil Qualitative Fit-Test Kit	
MSA's Banana Oil Fit-Test Kit relies on a test subject's ability to detect a 95% pure solution of Isoamyl Acetate (banana oil).	
Qualitative Fit Test Kit	801628
Qualitative Fit Test Kit, in rugged Pelican case	801629

Probed Respirator Facepieces

Probed Advantage Respirator

Probed Comfo Classic Respirator

Probed Comfo Elite Respirator

All Models Available

To make it easy for you to perform quantitative fit tests, MSA offers a full line of specially modified facepiece assemblies. Each probed facepiece is equipped with a built-in probe assembly, sampling line, and clothing clip to hold the sampling line. The probes are made of solid brass. In all MSA half-facepiece models, the probe is attached to the body of the respirator. Full-facepiece respirators are probed through the lens and sealed with a neoprene washer and brass fittings.

MSA also offers probed lenses for use with existing Ultravue facepieces. These lenses come completely assembled with the same brass probe, sealing hardware, and sampling line as the probed full-facepieces. All respirators use standard MSA high-efficiency filters for tests.

Air-Purifying Respirators: Industrial

Air-Purifying Respirator Fit-Test Accessories

QuikChek® I Adapter

Designed especially for use with MSA respirators equipped with demand-style exhalation valves, the QuikChek I Adapter allows quantitative fit testing without the need for a special probed facepiece.

QuikChek® II Adapter

The QuikChek II Fit Test Adapter allows quantitative fit testing of any Comfo® II, Comfo Classic®, Comfo Elite®, Duo-Twin™ or Ultra-Twin® Respirator. Preassembled, the adapter attaches quickly to the facepiece by threading it into the cartridge receptacle of these twin-cartridge respirators.

QuikChek® III Adapter

The QuikChek III Adapter is specially designed for respirators equipped with Ultra Elite® Full Facepieces. The QuikChek III model threads directly into the facepiece inlet. For completion of a quantitative fit test, an OptiFilter® XL Cartridge must then be threaded into the QuikChek III Adapter.

QuikChek® IV Adapter

Adapter allows qualitative fit-testing and is specially designed for Ultra Elite and Ultravue Full-Facepieces with quarter-turn quick disconnect. Fit-test kit includes a Type H Cartridge.

QuikChek Adapters	
QuikChek I Fit-Test Adapter	802710
Replacement Kit with 25 ft of sampling tubing and 25 connectors, clips, and suction cups	803196
QuikChek II Fit-Test Adapter	812022
Replacement Kit with 25 feet of sampling tubing and 25 connectors, clips and suction cups	803196
QuikChek III Fit Test Adapter	805078
Replacement Kit with 25 ft of sampling tubing, 25 connectors, clip and suction cups	803196
OptiFilter XL Cartridge (box of 6)	496081
QuikChek IV Fit-Test Kit	817446
Type H OptiFilter Cartridge (box of 6)	491010
QuikChek Adapter for Adv 1000	10006227
Advantage Fit Test Adapter (200 LS and 3200)	10056424

QuikChek® Adapter for Advantage 1000 Facepiece

QuikChek Adapter converts a standard Advantage 1000 Facepiece to a probed respirator by replacing the speaking diaphragm.

Advantage Fit Test Adapter

For Advantage 200LS and 3000 models.

Easy to use!

Online Response® Respirator Selector

Available on the internet at www.MSAnet.com/response

- Helps identify the proper respirator you need
- Has broadest range of respiratory protective devices available
- Recommends respirators for more than 700 chemical hazards
- Has nearly 3,000 chemical synonyms
- Lists up to 27 categories of respirators, with MUCs
- Is generic in nature

Cartridge Life Expectancy Calculator

Available on the internet at www.MSAnet.com/msanorthamerica

Drag your mouse onto Resources, then Tools, then Cartridge Life Calculator

MSA's interactive web pages help users determine the life expectancy of specific respirator cartridges in various hazardous situations. This information provides guidance for how long a cartridge should be used before it must be replaced.

OptimAir® TL PAPR

The OptimAir TL PAPR is designed for loose-fitting hoods to protect against particulates, toxic gases and vapors, or a combination. "Smart" features set flow rates automatically through built-in sensors. Unit offers audible and visual alarms for added worker safety. Audible alarms travel up the breathing tube close to the user's ear.

MSA's OptimAir TL PAPR incorporates a sleek, low-profile design for user comfort never before offered in a PAPR. All components including the motor blower, cartridges and battery are packaged in a single hip-hugging housing. Improved motor blower electronics allow for optimum air flow and filter resistance while the compact and ergonomic battery pack affords lightweight comfort and fit. Flow control sensors are activated by insertion of the cartridges and breathing hose to the blower housing. The unit automatically adjusts for altitude via an internal pressure switch.

Superior design features permit fast, accurate changeout of cartridges, hoods and batteries. Slim, curved PAPR housing helps to minimize fatigue and permits work in tight confined areas. Standard OptimAir TL PAPR kit includes motor blower, smart charger, standard battery, and decon belt.

NIOSH-Approved

A variety of hood materials, styles and configurations are all NIOSH-approved, including DuPont Tychem SL and QC with single and double bib. A choice of hose connection is also available. Unit has an APF of 1,000 (Assigned Protection Factor.

Smart Design Features

- Crush proof breathing tube
- Automatic setting of flow rates
- Audible and visual alarms for low flow indication and low battery voltage
- Less bulk and better weight distribution improves worker efficiency
- Every cartridge has its own sealing gasket

Cartridges and Accessory Options

- P100
- Acid gas/organic vapor plus P100
- Acid gas/ammonia/formaldehyde plus 100
- Smart charger
- Decon or comfort waist belt
- Extended life battery
- Shoulder strap

OptimAir TL PAPR

OptimAir TL PAPR Kit

10081116	OptimAir Kit, for hoods with standard battery

Hoods

Tychem QC Hoods

With suspension, 4-pack	single bib	double bib
Threaded connector	10083329	10083330
Standard	10083383	10083384
With suspension, 4-pack, yellow	*single bib*	*double bib*
Threaded connector	10086925	10086926

Tychem SL Hoods

With suspension, 4-pack	single bib	double bib
Threaded connector	10083381	10083382
Standard	10083385	10083386

Hood Accessories

10083843	Hose clamp for standard hood, 6-pack
10049631	Hood hose
10078469	Suspension only, for Tyvek hood
10083618	Sweatband for hood suspension, 10-pack
10085084	"O" Ring replacement, hose hood, 10-pack

OptimAir TL PAPR Accessories

Cartridges

10080455	HE cartridge, 6-pack, Hi-efficiency particulate
10080454	GMC HE cartridge, 6-pack, (organic vapors, acid gases, HE)
10080456	GME HE cartridge, 6-pack, (acid gases, ammonia, formaldehyde, HE)
10081414	Cartridge receptacle cover

Battery and Charger

10076108	Standard battery for OptimAir TL PAPR
10076110	Standard battery charger for OptimAir TL PAPR
10076109	Long-life battery for OptimAir TL PAPR
10076107	Long-life battery charger for OptimAir TL PAPR

Decon Accessories

10075799	Decon cover for OptimAir TL PAPR, 5-pack, clear
10087152	Decon cover for OptimAir TL PAPR, 5-pack, yellow
10078201	Decon belt (backpack buckle)
10074725	Decon belt (cam lock buckle)

OptimAir® 6A PAPR with OptiFilter® Cartridges

The OptimAir 6A Powered Air-Purifying Respirator (PAPR) provides respiratory protection by filtering contaminates from ambient air and providing a constant flow to either a facepiece or hood. It can be used with a family of filters and chemical cartridges for protection against particulates, toxic gases and vapors, or a combination of these hazards.

The OptimAir 6A includes a motor/blower module and rechargeable NiCad battery and is designed to operate for a full shift. It uses only two filters. The unit is available with full or half-mask facepieces, or a hood. Hooded OptimAir 6A PAPRs are only approved for use with the OptiFilter Type HE Cartridges only.

Applications include hazardous materials cleanup, asbestos and lead paint abatement, chemical processing, foundry, smelter and coke oven applications, and nuclear facilities work.

For more information, see Data Sheet 10-00-09.

Facepieces for OptimAir 6A

	Black Hycar			Black Silicone		
	Small	Medium	Large	Small	Medium	Large
Ultravue	471218	457126	471230	480251	480247	480255
Ultra Elite	493064	493020	493108	493072	493028	493116
Comfo	480127	480122	480132	480130	480125	480135
Comfo Welder's	484204	484198	484210	484206	484200	484212

OptimAir 6A PAPR with Ultravue Facepiece

Assembly includes motor/blower module, NiCad Battery, facepiece, breathing tube, belt, and battery charger.

Facepiece	Size	Part No.
Black Hycar Ultravue	Medium	494236

OptimAir 6A PAPR, less facepiece

Assembly includes motor/blower module, NiCad Battery, breathing tube, belt, and battery charger. **Order facepiece from table at left.**

OptimAir 6A PAPR, less facepiece	10023039

OptimAir 6A with Tyvek Hood

Assembly includes motor/blower module, NiCad battery, Tyvek Hood, breathing tube, belt and battery charger.

Facepiece	Cartridge	Part No.
Tyvek Hood	Type HE only	491301

Replacement Parts

Motor/Blower Module	491102
Battery Pack for OptimAir 6A	491120
Standard Single-Unit Battery Charger	463471
Single-Unit Dual-Rate Battery Charger	486614

Replacement Hoods for OptimAir 6A with Tyvek Hood

Tyvek Hood Shell only	488721
Tyvek Hood Assembly	486485

Support Belts for PAPRs

A polyurethane-coated nylon support belt is the standard belt with the OptimAir 6A PAPR. In addition, MSA offers a clear PVC support belt. Both belts are easy to decontaminate. If decontamination is not a factor, users may opt for an uncoated nylon web belt. Optional shoulder support strap may be used with any of these PAPR belts.

Polyurethane-coated Nylon Suport Belt	492827
PVC Support Belt	473902
Web Support Belt, uncoated	9961
Shoulder Support Strap	803903

OptiFilter XL/OptiFilter Cartridges for OptimAir 6A PAPR

MSA Purifying Element	Purifying Protection Code	Color Coding	Respiratory Hazards	Part No.	No. in Box	NIOSH Approval	
OptiFilter XL Type H	HE		Particulate filter (99.97% filter efficiency level) effective against all particulate aerosols.	10042346 496081	20 6	TC-21C-512 (Ultravue) TC-21C-516	TC-21C-513 (Comfo Style) (Tyvek Hood)
OptiFilter GMA-H	OV/HE		Approved for not more than 1,000 ppm organic vapors; particulate filter (99.97% filter efficiency level) effective against all particulate aerosols.[1,2,3,4,5]	800376	6	TC-23C-1263 (Ultravue)	TC-23C-1257 (Comfo Style)
OptiFilter GMC-H	OV/AG/HE		Approved for not more than 1,000 ppm organic vapors; chloride, chlorine dioxide, hydrogen chloride, sulfur dioxide, and escape only from hydrogen sulfide; particulate filter (99.97% filter efficiency level) effective against all particulate aerosols.[1,2,3,4,5]	494217	6	TC-23C-1056 (Ultravue)	TC-23C-1252 (Comfo Style)
OptiFilter GMD-H	AM/MA/HE		Approved for ammonia and methylamine; particulate filter (99.97% filter efficiency level) effective against all particulate aerosols.[1,2,4,5]	494219	6	TC-23C-1058 (Ultravue)	TC-23C-1254 (Comfo Style)

Notes

1 Cannot be used w/ PreFilter/Cover Assembly P/N 497098.

2 Do not use in atmospheres containing less than 19.5 percent oxygen, or in atmospheres immediately dangerous to life or health.

3 Do not wear for protection against organic vapors with poor warning properties or those which generate high heats of reaction with the sorbent material in the cartridge.

4 Cannot be used on PAPRs equipped with Tyvek Hood.

5 99.97 percent efficient against 0.3 micron DOP.

⚠ WARNING

An appropriate cartridge change-out schedule must be developed by a qualified professional, unless the cartridge/canister utilizes an end-of-service-life indicator. The change-out schedule must take into account all factors that may influence respiratory protection including specific work practices and other conditions unique to the workers' environment. If using against substances having poor warning properties, there is no secondary means of knowing when to replace the cartridges/canister. In such cases, take appropriate additional precautions to prevent overexposure, which may include a more conservative change-out schedule or using an air-supplied respirator or SCBA. Failure to follow this warning can result in serious personal injury or death. As a reference, at right is a partial list of substances having poor warning properties:

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

OptimAir® MM 2K PAPR with Type HE OptiFilter® XL Filter

The OptimAir MM 2K Powered Air-Purifying Respirator (PAPR) is designed for abatement, nuclear, lead and other hazardous particulate environments. The PAPR filters particulates from ambient air and provides a constant flow of respirable air to the Advantage 3000, Ultravue or Ultra Elite Facepiece. The mask-mounted motor/blower with HEPA filter has a low profile design that enhances user maneuverability and simplifies decontamination.

OptimAir MM 2K PAPR with Advantage 3000 Face-piece

The PAPR includes a small, lightweight, water-resistant nickel metal hydride (NiMH) battery pack that will operate for eight hours of continuous use. Weighing only 12.5 oz., it measures only 3"x 5"x 1". The low-profile unit fits close to the wearer's body. The sealed battery pack is water-resistant for easy shower decontamination. Another advantage: NiMH batteries do not have the "memory effect" associated with NiCad batteries. The standard Dual-Rate Battery Charger will recharge a fully discharged battery in less than three hours.

OptiFilter Cartridges for OptimAir MM 2K PAPR

MSA Purifying Element	Purifying Protection Code	Color Code	No. in Box	Part No.
OptiFilter XL, Type HE	HE		20	10042346
OptiFilter XL, Type HE	HE		6	496081

For more information, see Data Sheet 10-04-09.

Complete OptimAir MM 2K PAPR Assemblies

All assemblies include: motor/blower, NiMH battery, dual-rate battery charger, cable, one Type HE OptiFilter XL Cartridge, belt, and choice of Advantage 3100, Ultravue or Ultra Elite Facepiece.

	Advantage 3100 PAPR		
Harness	Small	Medium	Large
with Rubber Harness	10034152	10034150	10034151
with Advantage Harness	10034155	10034153	10034154
	Ultravue PAPR		
Material	Small	Medium	Large
Black Silicone	10023881	10023859	10023880
Black Hycar	10023858	10023569	10023857
	Ultra Elite PAPR		
Material	Small	Medium	Large
Black Silicone	10023886	10023887	10023885
Black Hycar	10023882	10023883	10023884

Replacement Facepieces

	Advantage 3100		
Facepiece	Small	Medium	Large
with Rubber Harness	10028999	10028998	10029000
with Advantage Harness	10031343	10031342	10031344
	Ultravue		
Material	Small	Medium	Large
Black Silicone	480251	480247	480255
Black Hycar	471218	457126	471230
	Ultra Elite		
Material	Small	Medium	Large
Black Silicone	493072	493028	493116
Black Hycar	493064	493020	493108

Accessories

Type HE OptiFilter XL Prefilter/Cover for use with OptimAir MM 2K PAPR

Designed to reduce filter loading in asbestos abatement and other high dust applications.

OptiFilter XL prefilter/cover assembly to protect the cartridge from water-spray and gross asbestos-containing material	497098
Prefilters, box of 50	493524
Flow-Check Meter	487995
Adapter for Flow-Check Meter, for use with OptimAirMM PAPR	491046

Replacement Parts

NiMH Battery Pack for OptimAir MM 2K	10023481
Motor/Blower Assembly	10023482
Cable Assembly	10023480
Dual-Rate Battery Charger for OptimAir MM 2K	10023483

OptimAir MM 2K PAPR Upgrade Kit

Upgrade Kit includes: motor/blower module, NiMH battery, dual-rate battery charger, cable, one Type HE OptiFilter Cartridge, and belt. Use your present demand-style Ultravue or Ultra Elite Facepiece or order facepiece separately from table above.

OptimAir MM 2K Upgrade Kit	10025945

OptimAir® 6A PAPR with OptiFilter® Cartridges for Homeland Security Applications

A powered air-purifying respirator that filters contaminants from ambient air via CBA/RCA OptiFiler Cartridges. Belt-mounted motor/blower provides constant air flow via breathing tube to facepiece.

- Features Millennium Facepiece
- Used with combination cartridges for protection against particulates, toxic gases and vapors, or a combination of these hazards
- Maintenance-free lithium battery with 10-year shelf life
- Optional rechargeable NiCd battery

OptimAir 6A PAPR Kit	
OptimAir 6A PAPR Kit complete with medium Millennium Facepiece, lithium battery, belt, motor/blower module. (Order OptiFilter cartridges separately.)	10046394
CBA/RCA OptiFilter Cartridges, Box of 6	10011890
Lithium Battery Pack for OptimAir 6A PAPR	816912
Motor/Blower Module	491102
Protective Covers, Package of 5	808494
Optional Battery and Charger	
Rechargeable NiCad Battery	491120
Standard Single-Unit Battery Charger	463471
Single-Unit, Dual-Rate Battery Charger	486614
Other OptimAir 6A Replacement Parts and Accessories	
Breathing Tube Assemblies	
For Tight-Fitting Facepieces, 30"	486364
For Tight-Fitting Facepieces, 36''	492197
For Tyvek Hood	481980
Protective Cover	
Protects from water (such as in asbestos decontamination showers) or particulate contamination.	
Pkg of 5 for OptimAir 6A	808494
Flow-Check Devices	
MSA flow-check devices allow users of PAPRs to quickly and conveniently verify that their unit is providing the required air flow.	
Flow-Check Meter	487995
Adapter for Flow-Check Meter for use with Tyvek Hood	489999
Adapter for Flow-Check Meter for use with OptimAir MM PAPR	491046

Chin-Type Gas Masks

The Chin-Type Gas Mask is a protective system consisting of a full facepiece and canister. The small, round plastic canister attaches directly to the facepiece. The system is designed to permit downward head movement.

The Chin-Type Gas Mask is designed for respiratory protection against a specific gas or group of gases as indicated by canister identification. See the canister table for specific canister approvals. From a practical standpoint, gas masks are generally suitable for ventilated areas with relatively stable contaminant concentration levels. They should never be used in confined spaces or where oxygen deficiency and high gaseous concentrations may occur. Gas masks may also be used for escape only from atmospheres in which the contaminant concentration does not exceed the maximum use condition of the gas mask.

Facepieces

| Advantage Facepiece | 3100 Ultravue Facepiece | Ultra Elite Facepiece |

Whether you choose the Advantage 3100, Ultravue or Ultra Elite facepiece, all three are available in three sizes to accommodate a wide range of users. The Advantage 3100 facepiece has a silicone rubber facepiece, while the Ultravue and Ultra Elite facepieces are available in a choice of silicone or Hycar rubber. All have a scratch-resistant polycarbonate lens that provides a wide field of vision. Optional lens cover accessories provide even greater scratch resistance. All three facepieces feature a nosecup that helps reduce lens fogging in low temperature conditions or in high-humidity conditions.

Gas Mask Facepieces

Harness	Advantage 3100 Single-Port Respirator Facepiece		
	Small	Medium	Large
with Rubber Harness	10028999	10028998	10029000
with Advantage Harness	10031343	10031342	10031344

Material	Ultravue Facepiece			Ultra Elite Facepiece		
	Small	Medium	Large	Small	Medium	Large
Black Silicone	480251	480247	480255	493072	493028	493116
Black Hycar	471218	457126	471230	493064	493020	493108

Replacement Canisters for Chin-Type Gas Masks

MSA Canister Identification	Purifying Protection Code	Color Coding	Approval	Maximum Use Conditions		Gas/Vapors	Part No.
				% Volume	PPM		
Phosphine/ Ammonia/ Chlorine/P100	PH/AM/CL		TC-14G-0274	0.50% / 0.15%	5000 / 1500	Ammonia and Chlorine* Phosphine*	10059903
Organic Vapor/P100	OV		TC-14G-0279	0.50%	5000	Organic Vapors, also effective against organic iodides and iodide vapors*	10067469
Hydrogen Fluoride/P100	HF		TC-14G-0280	0.10%	1000	Hydrogen Fluoride*	10067491
Formaldehyde Acid Gas/ Chlorine Dioxide/ Escape from Hydrogen Sulfide/P100	FM/AG/CD /HS		TC-14G-0282	0.05% / 0.50% / 0.10%	500 / 5000 / 1000	Formaldehye* Acid Gases and Hydrogen Sulfide* Chlorine Dioxide*	10067470

*Canister contains a P100-Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

Belt-Mounted Version

The belt-mounted version of the Chin-Type Gas Mask allows the wearer to mount the chin-style canister on a support belt. This shifts the weight of the canister to the hip, providing greater comfort for some wearers. The belt-mounted version is also recommended for welding or grinding operations, as the canister can be positioned away from sparks or molten metal. An optional spark cover is available to protect canister from spark damage.

The additional parts needed are listed below. See page 16 for Welders Adapters, lenses and protective hood.

Additional Parts for Belt-Mounting

Belt Clip	10068195
Breathing Tube	10068129
PVC Belt	473902
Web Support Belt, uncoated	9961
Polyurethane-coated Nylon Support Belt	492827
Spark Cover	10068152

Storage Cases for Chin-Type Gas Mask

MSA Canister Identification	Part No.
Phosphine/Ammonia/Chlorine/P100	10075204
Organic Vapor/P100	10075207
Hydrogen Fluoride/P100	10075205
Formaldehyde Acid Gas/Chlorine Dioxide/ Escape from Hydrogen Sulfide/P100	10075206
Wall bracket	10071231

Industrial-Size and Super-Size Gas Masks

The Super-Size and Industrial-Size Gas Masks are a protective system consisting of a facepiece, breathing tube, harness, and chemical-sorbent canister. A large, oval-shaped aluminum canister attaches to the facepiece with a corrugated breathing tube. The canister is supported on the wearer's chest with a nylon carrying harness.

The Industrial and Super-Size Gas Masks are designed for respiratory protection against a specific gas or group of gases as indicated by canister identification. See the table for specific canister approvals. From a practical standpoint, gas masks are generally suitable for ventilated areas with relatively stable contaminant concentration levels. They should never be used in confined spaces or where oxygen deficiency and high gaseous concentrations may occur. Gas masks may also be used for escape only from atmospheres in which the contaminant concentration does not exceed the maximum use condition of the gas mask.

The Super-Size Gas Masks have a Window-Cator Canister, which contains an indicator to show the effectiveness of the canister against certain contaminants. The small round window in the front of the canister is an end-of-service-life indicator (ESLI). When the shade of the ESLI changes from its "Starting" color to the "Time-To-Change" color, the canister is beginning to lose its effectiveness and must be replaced.

For more complete information, see Data Sheet 05-00-01.

Industrial-Size Gas Mask

Super-Size Gas Mask

Window-Cator® Type N Gas Mask Canister

Industrial-Size Gas Mask, Complete Assemblies

Each assembly includes medium black Hycar Ultravue Facepiece, breathing tube assembly, and harness assembly, and **one** indicated canister packaged in a plastic carrying case.

Gas	Canister	Part No.
Organic vapor	816001 GMA-N95; front-mounted	817071
Ammonia	816002 GMD-N95; front-mounted	817072
Chlorine	816003 GML-N95; front-mounted	817073

Super-Size Gas Mask, Complete Assemblies

Each assembly includes medium black Hycar Ultravue Facepiece, breathing tube assembly, and harness assembly, and two indicated canister packaged in a plastic carrying case.

Gas	Canister	Part No.
Organic vapor, phosphine, chlorine dioxide, chlorine, hydrogen sulfide	816009 GMHS-SSW-N95; front-mounted	817077
Ethylene oxide	816010 GMEO-SSW-N95; front-mounted	817078
Acid gas, organic vapor, carbon monoxide, ammonia	816012 Type N-P100; front-mounted	817080

Replacement Canisters for Industrial and Super-Size Gas Masks

MSA Canister Identification	Purifying Protection Code	Color Coding	Approval	Maximum Use Conditions	Part No.
GMA-N95	OV		TC-14G-0197	2% organic vapors*	816001
GMD-N95	AM		TC-14G-0196	3% ammonia*	816002
GML-N95	CL		TC-14G-0207	2% chlorine *	816003
GMHS-SSW-N95	OV/PH/CD/CL/HS		TC-14G-0198	0.05% chlorine dioxide; 0.15% phosphine; 2% organic vapors or chlorine; 1% hydrogen sulfide* Window-Cator® canister has end-of-service indicator for hydrogen sulfide	816009
GMEO-SSW-N95	EO		TC-14G-0199	0.5% ethylene oxide* Window-Cator® canister has end-of-service indicator for ethylene oxide	816010
Type N	AG/OV/CO/AM		TC-14G-0233	2% acid gases, organic vapors, or carbon monoxide; 3% ammonia, or 2% total when more than one class is present; also effective against hydrogen fluoride gas** Window-Cator® canister has end-of-service indicator for carbon monoxide	816012

*Canister contains an N95-Particulate Filter (95% filter efficiency level) effective against particulate aerosols free of oil.

**Canister contains a P100-Particulate Filter (99.97% filter efficiency level) effective against all particulate aerosols.

Respirators for Riot Control

The Millennium Riot Control Mask and the Advantage 10000 Riot Control Masks are NIOSH-approved for protection against CN and CS Riot Control Agents, and P100 particulate efficiency level.

Millennium® Riot Control Gas Mask

A Hycar version of the reliable military-style gas mask (MCU-2/P Mask, used by the U.S. Air Force in Desert Storm) that combines high performance, customized fit, comfort, and cost efficiency.

- Flexible, 1-piece polyurethane lens with wide field of vision is bonded to durable Hycar rubber facepiece
- Dual-canister mount (NATO 40mm thread) allows weapon sighting from either shoulder
- Drinking tube provides connection for fluid ingestion in contaminated atmospheres
- Fully elastic, 6-point head harness promotes easy on/off, easy adjustment, no hair pulling
- Internal nosecup with 2 check valves deflects air from the lens, reduces fogging
- Standard mechanical speaking diaphragm included, or add MSA's optional ESP® II Communications System
- NIOSH -approved (No. TC-14G-0254) for protection against chloroacetophenone (CN), chlorobenzylidene (CS), P100 particulate efficiency level, and particulates

Advantage® 1000 Riot Control Gas Mask

A clean, simplified respirator with Hycar facepiece (based on a proven facepiece design developed for the U.S. Armed Forces) that's up to 40% lighter than conventional full-face respirators and gives high performance, customized fit, comfort, economy, and user acceptance.

- Flexible, 1-piece polyurethane lens with wide field of vision is bonded to durable Hycar rubber facepiece
- Dual-canister mount (bayonet mount) allows weapon sighting from either shoulder
- Fully elastic, 6-point head harness promotes easy on/off, easy adjustment, no hair pulling
- Standard nosecup helps eliminate lens fogging
- Standard mechanical speaking diaphragm included, or add MSA's optional ESP II Communications System
- NIOSH-approved (No. TC-14G-0235) for protection against chloroacetophenone (CN), chlorobenzylidene (CS), P100 particulate efficiency level, and particulates

Millennium Riot Control Mask

With nosecup, drinking tube, and clear polycarbonate outsert. Order canisters separately.

Small	10051286
Medium	10051287
Large	10051288

Millennium Riot Control Canisters

Millennium RC Canisters, box of 6	818264

Advantage 1000 Riot Control Gas Mask

Complete with canister, nosecup, and identification tag.

Small	813860
Medium	813859
Large	813861

Advantage 1000 Riot Control Canisters

Advantage 1000 RC Canisters, box of 6	817590

Millennium and Advantage Accessories

ESP® II Communications System

The ESP II Communications System, a 1-piece, self-contained, electronic speech projection device, allows wearers to speak normally, yet be heard loud and clear.

ESP Communications System for Millennium and Advantage 1000 Facepieces (less battery)	10026265

Lens Outsert

Polycarbonate lens outsert snaps into place over Millennium or Advantage 1000 facepiece lens, providing additional impact protection. Tinted outsert helps conceal identity (suitable only when sufficient light exists).

For Millennium Facepiece	Small	Medium/Large
Clear lens outsert	10008907	10008906
Tinted lens outsert	10008909	10008908
For Advantage 1000 Facepiece	Small	Medium/Large
Clear	806463	806462
Tinted	806465	806464

Other Accessories

Gas Mask Pouch, Military Style	10034184
Black Nylon Bag	817040
Advantage 1000/Millennium Spectacle Kit	816137
Butyl-Coated Nylon Hood	305022

Respirators for Homeland Security

Millennium® CBRN Gas Mask

The new NIOSH government CBRN standard for full-facepiece gas masks was issued on March 7, 2003. After extensive testing to that standard, MSA's Millennium CBRN Gas Mask was first to receive NIOSH certification as "compliant against CBRN".

A Hycar version of the reliable military-style gas mask (MCU-2/P Mask, used by U.S. Air Force in Desert Storm) that combines high performance, customized fit, comfort and cost efficiency.

- Flexible, 1-piece polyurethane lens with wide field of vision is bonded to durable Hycar rubber facepiece.
- Dual-canister mount allows weapon sighting from either shoulder
- Drinking tube provides connection for fluid ingestion in contaminated atmospheres
- Fully elastic, 6-point head harness promotes easy on/off and adjustment, with no hair pulling
- Internal nose cup with 2 check valves, deflects air from the lens, reduces fogging
- CBRN canister containing chemical sorbents and a P100 filter to attract, retain and neutralize contaminants
- Standard mechanical speaking diaphragm included, or add MSA's optional ESP® II Communications System
- Optional butyl-coated nylon hood for total head protection
- NIOSH-approved (No. TC-14G-0270) for protection at a CBRN Cap 1 rating

Millennium CBRN Gas Mask	
With nosecup, drinking tube, and clear polycarbonate outsert. Order canister separately.	
Small	10051286
Medium	10051287
Large	10051288
Millennium CBRN Canister	
MSA CBRN Canister	10046570

For Millennium Gas Mask accessories, see p. 14.

Ultra Elite® CBRN Gas Mask

Safety
- Super-soft black Hycar rubber exceeds the CBRN permeation requirements
- Large lens with 83% unimpeded vision
- Centrally located inlet port for secure, comfortable fit and feel
- Centrally located mechanical speaking diaphragm for clear communications
- Optional ClearCommand® Amplifier for increased communication capabilities

Simplicity
- Available with a 5-point rubber or SpeeD-ON® head harness
- Identical sealing surfaces for both SCBA and Gas Mask facepieces— eliminating the need for redundant fit testing
- Simplified respiratory protection training program

Reliability
- The Ultra Elite facepiece is fire-service proven, with over a decade of trusted use
- MSA has been making gas masks since World War I
- Largest supplier of gas masks to the law enforcement market

Ultra Elite CBRN Gas Mask		
Size	with rubber Head Harness	with SpeeD-On Head Harness
Small	10052776	10052780
Medium	10052781	10052779
Large	10052778	10052777
Canisters & Cartridges		
MSA CBRN Canister	10046570	

Responder™ CBRN PAPR (Powered Air-Purifying Respirator)

A belt-mounted powered air-purifying respirator with choice of 2 proven tight-fitting facepieces in 3 sizes. The motor/blower provides constant air flow of a minimum 115 lpm to the facepiece via the breathing tube. Can be used with CBRN cartridge or with the OptiFilter XL or PAPR GME Multigas HE cartridge for tactical operations.

- Protects wearers for up to 8 hours under many hazardous conditions
- First CBRN-approved PAPR with a tight-fitting facepiece
- Choice of 2 proven positive-pressure facepieces, the MSA Millennium and the MSA Ultra Elite
- Choice of CBRN cartridge or multi-gas / particulate chemical cartridges for non-CBRN use

MSA's Responder CBRN PAPR system is ideal for military and special operations personnel who need non-IDLH respiratory protection for an extended period of time.

Industry trusted, with over 50,000 C420's fielded in various U.S. military programs, the C420 Motor-Blower is ideal for filtering contaminants from ambient air and providing a constant airflow of at least 115 lpm to the user's facepiece, providing a twenty times greater OSHA assigned protection factor than APR, due to positive pressure in the mask.

The C420 is available with 2 batteries that have the ability to be "hot-swapped" during warm environment use. The Lithium-Sulfur Dioxide mission battery has an 8 hour run-time. The Nickel Metal Hydride rechargeable battery has a 4 hour run-time. The motor / blower will not interfere with radio communications as it is EMI shielded to MIL-STD-461C.

The C420 comes complete with the motor-blower, belt, airflow indicator and breathing tube.

Responder CBRN PAPR Complete Systems

You must choose C420 PAPR Kit, facepiece, and cartridge for complete system.

C420 PAPR Kits (less facepiece and cartridge)

Part No.	Description
B-60141-030	C420 PAPR Kit with 30" Breathing Tube
B-60141-036	C420 PAPR Kit with 36" Breathing Tube

Gas Mask Facepieces with Head Harness (less cartridge)

Facepiece	Material	Head Harness	Size		
			Small	Medium	Large
Millennium	Hycar	6-point elastic	10051286	10051287	10051288
Ultra Elite	Hycar	rubber	10052776	10052781	10052778
Ultra Elite	Hycar	SpeeD-ON	10052780	10052779	10052777

Cartridges

Part No.	Description
10046570	PAPR Responder* cartridge, each
496081	OptiFilter XL cartridge, 6 pack
10072237	PAPR GME Multigas HE cartridge, each

*Designed to meet new NIOSH CBRN PAPR Requirements.

Accessories for Responder PAPR

Part No.	Description
B-20040-001	NiMH Rechargeable Kit (2 NiMH Batteries, Charger & Cap)
S-20036	NiMH Rechargeable Battery Pack
B-20090-001	NiMH Rapid Battery Charger
M-20020	LiSO2 Mission Battery
B-30060-001	NiMH Rechargeable Battery Cap Assembly
S-30019	Web Belt Assembly
B-10079-001	PAPR Carrying Case

About the new CBRN PAPR Standard

NIOSH released a CBRN standard for powered air-purifying respirators (PAPRs) in October 2006. NIOSH conducted product testing and issued approvals to MSA's Responder PAPR, which was the first PAPR with a tight-fitting facepiece to pass the NIOSH requirements.

OptimAir® 6HC PAPR

The OptimAir 6HC PAPR (Health Care Powered Air-Purifying Respirator) from MSA is specifically designed to protect health care professionals from residual Chemical/ Biological/ Radiological Agents, when they are performing First Responder duties during Homeland Security or terrorist situations.

The system features a lightweight, chemical-resistant Tychem SL Hood and belt-mounted blower with two HC Cartridges. The canisters contain a pleated high-efficiency (P100) filter to remove aerosols, radionuclides, and solid particulates; and an impregnated activated carbon bed to adsorb (filter out) gases and vapors. The carbon bed is the same as used in military canisters and is effective against mustard (HD), Sarin (GB), DMMP (a Sarin simulant), HCN, and CK.

For more information, see Bulletin 1010-13-MC.

- Designed specifically for use by ER and other health care providers during Homeland Security situations.
- Continuous air flow meets or exceeds NIOSH standard
- Entire lightweight PAPR weighs under 6 pounds
- Available with Tychem SL Hood or Advantage 3100 Facepiece.
- Tychem SL hood weighs only 8 ounces.
- Hood is compatibly worn with facial hair and glasses
- No fit testing necessary when using hood
- Design allows freedom of movement plus optimum protection
- Tychem SL hood and Advantage 3100 facepiece are comfortable, easy to don and use
- Lithium battery provides 10-year shelf life, 4 hours of wear time
- Approved for High Efficiency, Chlorine, Sulfur Dioxide, Hydrogen Chloride, Hydrogen Fluoride, Hydrogen Sulfide (escape only)
- NIOSH approval TC-23C-2201 with Tychem Hood
- NIOSH approval TC-23C-2209 with Advantage 3100 Facepiece

OptimAir 6HC PAPR with Tychem Hood

OptimAir 6HC PAPR	
OptimAir 6HC PAPR with Tychem Hood	
OptimAir 6HC PAPR with Tychem Hood Includes motor/blower module, lithium battery, breathing tube, belt and 2 HC Cartridges	10041550
OptimAir 6HC PAPR with Advantage 3100 Facepiece	
OptimAir 6HC PAPR with Advantage 3100 Facepiece Includes motor/blower module, lithium battery, breathing tube, belt and 2 HC Cartridges	10045100
Accessories and Replacement Parts	
HC Cartridges, Pkg. of 6	10042448
Tychem SL Hood	10048179
Breathing Tube for Hood	481980
Single-use lithium battery	10048180
NiCd Battery for training use	491120
Single-Unit Single-Rate Battery Charger for NiCd Battery	463471
Motor/Blower module	10048178
Polyurethane-coated nylon belt	492827
Flow Check Meter	487995
Adapter for Flow Check Meter for use with Hood	489999
Butyl Hood	305022

Safe Escape™ CBRN 15-minute Escape Respirator

NIOSH CBRN Certified!

When escaping from CBRN agents, every second counts. Depend on the Safe Escape Hood from MSA. The hood gives your employees the protection they need to escape from a terrorist situation safely, quickly and easily — whether they work in high-profile office environments, for government agencies or embassies, or as law enforcement or first responders. The MSA Safe Escape Hood is the equipment of choice for today's diverse workforce.

Engineered for Maximum Performance

Manufactured with a high-performance laminate material, the hood is designed to provide you with the latest in head and neck coverage with respiratory protection against CBRN agents. The soft, high-stretch rubber neck seal conforms to irregular neck contours, allowing a secure fit on a wide variety of users. Its unique sized nosecup helps reduce lens fogging and carbon dioxide buildup by directing airflow inside the hood.

The Safe Escape Hood canister features a high-efficiency particulate filter and activated carbon to combat aerosols, gasses and vapors. In fact, the canister used in the hood contains 50% more carbon than similar canisters used by the U.S. military. Furthermore, MSA has performed extensive testing on the Safe Escape Hood against both simulated and live chemical agents beyond what is tested by NIOSH.

Designed for Comfort

In addition to designing the hood for maximum protection, MSA also took into account the comfort factor. A user who is potentially under stress requires ease of donning and use. The large lens and translucent hood allow better visibility, face recognition and help reduce claustrophobia. The nose cup allows communication superior to that of conventional devices, which require wearers to breathe through a mouth bit. With the integrated nose cup, wearers can breathe and speak normally to provide potentially life-saving communications. The hood also features cradle-type self-adjusting head straps that allow for quick, no assistance donning in the event of an emergency.

For more information, see Bulletin 0514-02.

Safe Escape Respirator	
Safe Escape Respirator in Hextreme Case, Standard	
Universal SIze	10073702
Safe Escape Respirator in Hextreme Case, Tactical Version	
Universal SIze	10073923
Trainer Version of Safe Escape Respirator	
Universal SIze	10073703
Accessories	
Safe Escape Respirator Sizing Kit	10066681
Optional carrying straps and harness kit	10068310
DVD Training video for Safe Escape Respirator	10068013

Note: The only difference between the standard and tactical versions is the outside labeling on Hextreme Case.

Carrying the Safe Escape Respirator

Safe Escape Respirator in Hextreme Case

A Guide to Air-Line Systems

Description

Type C Supplied-Air Respirators, more commonly referred to as air-line respirators, are designed to provide long-duration respiratory protection.

They generally consist of a full-facepiece or half-mask facepiece connected by an air-supply hose to an air source (either a compressor or bank of large air cylinders). When connected to the air source, the respirator delivers a supply of respirable air to the user.

Accessory equipment, such as pressure regulators, pressure relief valves, carbon monoxide monitors and filters for air compressors, may be necessary to ensure that the air is at the proper pressure and quality for breathing. Air quality must be Quality Verification Level Grade D or better as defined in ANSI Standard Z-86.1-1973 (Compressed Gas Association Specification G-7.1 Commodity Specification for Air).

Current air-line systems fall into two categories: **Pressure-Demand** and **Constant Flow**. The difference between the two is how the air is supplied.

Pressure-demand systems deliver air only when the user necessitates it. Thus, pressure-demand devices afford greater breathing efficiency.

In contrast, with a constant flow device, air flow to the respirator is continuous. However, because the air flow is continuous, constant flow air-line systems are generally used only with a compressor for a virtually unlimited air supply.

Type C Supplied-Air Respirators are approved by the National Institute for Occupational Safety and Health (NIOSH) for use in atmospheres not immediately dangerous to life and health (IDLH) or from which the wearer can escape without wearing the respirator.

"Not immediately dangerous to life and health" means any hazardous atmosphere which may produce physical discomfort immediately, chronic poisoning after repeated exposure, or acute adverse physiological symptoms after prolonged exposure. (42 CFR, Part 84 subpart A, 84.2(x)).

This limitation is necessary because the air-line respirator depends entirely on an air supply not carried by the wearer. Therefore, if the air hose were severed or crimped, or the air compressor failed, the air supply to the wearer would be shut off. The wearer would be without respiratory protection and might not be able to safely escape from an IDLH atmosphere.

Another limitation of air-line respirators is that the air-supply hose limits the wearer to a fixed distance from the air source. As an air-line respirator user, it is your responsibility to supply the respirator with breathable air—Grade D or better. The following pages show complete hook-ups of various air-line systems, both pressure-demand and constant flow, from the air source to the respirator. The following information is a guide designed to aid you in hooking up your own air-line system.

Pressure-Demand Air-Line Respirators PD

Pressure-Demand Air-Line Respirators are designed to maintain a slight positive pressure of air inside the facepiece whether the wearer is inhaling or exhaling. This helps prevent contaminants from seeping in around the facepiece, even if there should be small breaks in the face-to-facepiece seal.

Pressure-Demand Air-Line Respirators are designed specifically for non-IDLH toxic atmospheres. The exception is if the respirator is equipped with an egress cylinder of air to use during escape.

Pressure-Demand Air-Line Units require an air supply from an uncontaminated compressed-air source as stipulated in General Industry Safety and Health Regulations, Part 1910.134 (OSHA) with the delivered air conforming to at least Grade D of ANSI Standard Z86.1.

A common air source for pressure-demand systems is a single cylinder of air which can be set up in remote sites that might otherwise be impossible to reach with a large stationary compressor.

Another air source option for pressure-demand respirators is a cylinder cascade system. A cascade system consists of several air cylinders joined together in a bank by means of coupler tees. Generally, the banks consist of three or more cylinders of either 244 cubic-feet or 330 cubic-feet-capacity. One or more workers can breathe from a cascade system.

If using a compressed air or a compressor system, each respirator generally requires 1.5 cfm per person and needs to maintain the inlet (working) pressure specified in the respirator instruction manual.

At a normal rate of consumption, a three-cylinder bank used with a pressure-demand unit will provide between 12 to 16.5 man-hours of air, depending on cylinder capacity.

MSA Pressure-Demand Air-Line Units Include:

PremAire® Air-Line Respirator System:
- with Escape Cylinder
  (for egress from IDLH atmospheres)
- with Vortex Tube
  (for suit-cooling applications)
- with Dual-Supply
  (to eliminate additional hose lengths)

PremAire® Cadet Respirator

PremAire® Cadet Escape Respirator
- with Escape Cylinder
  (for egress from IDLH atmospheres)

Abrasi-Blast™ Supplied-Air Respirator

Constant Flow Air-Line Respirators CF

Constant Flow Air-Line Respirators also maintain a slight positive pressure of air inside the facepiece whether the wearer is inhaling or exhaling. This helps prevent contaminants from seeping in around the facepiece, even if there should be small breaks in the face-to-facepiece seal.

Constant Flow Air-Line Respirators maintain air flow at all times, rather than only on demand. Because of this, constant flow units almost always use a compressor as their air source. A constant flow unit would quickly exhaust the air from a cylinder or cascade system.

There are two types of Constant Flow Air-Line Respirators: one uses a tight-fitting facepiece; the other, a loose-fitting hood or helmet. Inlet air pressure must be able to maintain at least 4 cfm for a tight-fitting facepiece and 6 cfm for a loose-fitting hood.

The inlet pressure for Constant Flow Air-Line Respirators varies between 10-15 psig for low pressure systems and 35-40 psig for high pressure systems.

For Constant Flow Air-Line Hoods, the inlet pressure usually ranges between 10-15 psig and 85-100 psig, depending on the type. Also, depending on the inlet pressure, the length of approved air-supply hose for these systems is usually between 8-50 feet for low-pressure systems and 8-300 feet for high-pressure systems. Consult the instruction manual for your respirator to determine the specific inlet pressure and hose length.

MSA Constant Flow Respirators with Loose-Fitting Hoods Include:
- Versa-Hood™ Air-Supplied Hood

MSA Constant Flow Respirators with Tight-Fitting Facepieces Include:
- Constant Flow Air-Line Respirator
- Constant Flow Direct-Connect Air-Line Respirator
- Constant Flow Duo-Twin™ Air-Line Respirator
- Constant Flow Duo-Flo™ Air-Line Respirator
- Abrasi-Blast™ Supplied-Air Respirator

PremAire® Supplied-Air Respirator System PD

The PremAire Supplied-Air Respirator System is one of the most advanced air-line respirators available. Designed to provide the utmost in versatility, the modular system allows users to order the respirator configured for their specific application.

A lightweight mask-mounted regulator provides high air flow and responds quickly to changing breathing requirements.

The basic PremAire Respirator includes the patented manifold and can be upgraded with any of the three following options:

1. an Escape Cylinder that permits emergency escape from Immediately Dangerous to Life and Health (IDLH) atmospheres. (Please see Note 2 below ordering information.)
2. a Dual-Supply option that lets workers connect from one pressurized continuous air source to another without losing continuity of air flow.
3. a Vortex Tube option that delivers whole-body temperature control for added worker comfort.

Fully Configured PremAire Manifold

The PremAire Respirator is a full-face, pressure-demand, Type-C supplied-air respirator with a patented waist-mounted manifold.

In addition to the flexibility offered by the manifold, the PremAire Supplied Air Respirator System is available with the Firehawk® Mask-Mounted regulator (MMR). This revolutionary 2nd-stage regulator, offered in push-to-connect (PTC) and slide-to-connect (STC) versions, combines user-friendly connections and unbeatable care and maintenance. The Firehawk MMR, originally designed for the rigorous conditions of the fire service, is a solid cover regulator for use with the Ultra Elite facepiece, considered best-in-class with over 94% field of vision with the MMR engaged. For more information, please reference Bulletin 0114-20 or call MSA Customer Service at 1-800-MSA-2222.

PremAire System User's Guide

The PremAire System User's Guide provides a comprehensive core instruction manual covering the basic PremAire Supplied-Air Respirator, plus four sub-manuals covering each of the PremAire System options (escape cylinder, Duo-Twin, dual-supply and (vortex tube.) The User's Guide also includes an illustrated parts list, a quick-reference chart showing the various PremAire Respirator configurations available, and a hard-cover binder with tab pages to house and organize these materials.

All these manuals are available on our website: www.MSAnet.com

Traditional MSA Part Numbers

See the following page for Assemble-To-Order information. For customers who require faster delivery, the most popular PremAire system combinations can still be ordered with a traditional MSA part number. These units are always stocked in our warehouse and are ready to ship upon receipt of order. These assemblies come with a medium Hycar Ultra Elite Facepiece and nosecup with rubber harness. For these assemblies, Quick-Disconnects must be ordered separately (see p. 41; you need a male plug with female 1/4" NPT (column 2), and a female socket assembly (column 5).

Complete Assemblies with Firehawk PTC Regulator	
Complete Assembly w/ Firehawk PTC, 5-minute 3AL aluminum cylinder, right-hip model, less case	10045162
Complete Assembly w/ Firehawk PTC, 10-minute 3AL aluminum cylinder, right-hip model, less case	10045163
Complete Assemblies with Firehawk STC Regulator	
Complete Assembly w/ Firehawk STC, 5-minute 3AL aluminum cylinder, right-hip model, with case	10045164
Complete Assembly w/ Firehawk STC, 10-minute 3AL aluminum cylinder, right-hip model, with case	10045165

The Assemble-To-Order System

MSA offers more PremAire System Respirator choices than ever before. Thousands of possible combinations let workers select just the right PremAire Respirator for the job.

MSA's Assemble-To-Order System (ATO) makes ordering the right unit easier and faster than ever. Instead of choosing from a handful of complete PremAire assemblies, users can order a custom-made unit with every option exactly as desired. The ATO System works by allowing users to create their own part numbers. Each digit of an ATO part number will represent a specific component, so that the entire part number represents a finished respirator built exactly to the desired specifications.

Using the ATO System below is easy. The user selects the number or letter that corresponds to the choice of components and fills in the

appropriate box. A number or letter from each category must be selected. For example, to order a PremAire System respirator with nylon belt assembly; right-hip 10-minute carbon fiber escape cylinder; dual-supply option with 8-inch hose; Firehawk PTC 30" solid cover; non-NFPA Ultra Elite medium hycar Facepiece with nosecup and EZ-DON harness; Foster steel quick-disconnect; and a hard case, use this ATO part number: C-PS151G-11M13-G-1.

Advantages of the ATO System include:

- You get the exact model of PremAire you need
- No special orders, because all orders are customized
- Fresher cylinders from our continually rotated inventory
- Simplified ordering process
- Timely delivery

PremAire Supplied-Air Respirator System Assemble-To-Order Matrix

Type		Belt Assembly		Escape Cylinders		Dual-Supply		MMR Regulator		Facepiece Type		Facepiece		Facepiece Size		Nosecup		Head Harness		Quick-Disconnect *		Case	
PS	PremAire System	1 2 3	Nylon Urethane Nomex	0 1 2 3 4 5 6 7 8	None 5-Min Right Hip Carbon Fiber 5-Min Left Hip Carbon Fiber 5-Min Right Hip Aluminum 5-Min Left Hip Aluminum 10-Min Right Hip Carbon Fiber 10-Min Left Hip Carbon Fiber 10-Min Right Hip Aluminum 10-Min Left Hip Aluminum	0 1 2	None 8" Hose less QD 15" Hose less QD	E F G H	Firehawk STC 30" Solid Cover Firehawk STC 42" Solid Cover Firehawk PTC 30" Solid Cover Firehawk PTC 42" Solid Cover	0 1 2	None Non-NFPA NFPA	0 1 2	None Ultra Elite, Hycar Ultra Elite, Silicone	0 S M L	None Small Medium Large	0 1 2	None (only if you have no FCPC) Ultra Elite, Medium Ultra Elite, Large	0 1 5	None Rubber SpeeD-ON	A B C D E F G H I J K	None Snap-Tite Aluminum Snap-Tite SST Snap-Tite Brass Hansen SST Hansen Brass Foster Steel Foster SST Foster Brass Cejn Chrome Duff-Norton Brass	0 1 2	None Hard Case Soft Case

C — **PS** ⬚ ⬚ ⬚ ⬚ ⬚ ⬚ ⬚ ⬚ ⬚ ⬚

Part Number **Quantity**

*Note: This matrix must only be used for ordering complete PremAire Systems. This matrix cannot be used for ordering individual components (i.e., facepieces, escape cylinders, etc.). Please order components separately using their standard MSA part number.

‡For applications strictly limited to non-IDLH atmospheres, NIOSH requires that the respirator system be configured without a bypass on the Fire Hawk Mask-Mounted Regulator (MMR). Please contact MSA Customer Service for more information.

* Unit requires use of a quick-disconnect for connection to air-line to maintain approval. All quick-disconnects listed are non-locking except for the Cejn chrome (J).

Note: See page 43 for air-line hoses.

PremAire System Upgrade Kits

Escape Cylinder Kits

Includes carrier assembly, 1st stage regulator, hose and cylinder

Kit with Fully-wound Carbon Fiber Five-minute Cylinder, for Right Hip	800696
Kit with Fully-wound Carbon Fiber Five-minute Cylinder, for Left Hip	800694
Kit with Fully-wound Carbon Fiber Ten-minute Cylinder, for Right Hip	800697
Kit with Fully-wound Carbon Fiber Ten-minute Cylinder, for Left Hip	800695

Vortex Tube Kits

Kit with 6" Hose, Cool-Only Version	800706
Kit with 6" Hose, Warm/Cool Version	800710
Kit with 12" Hose, Cool-Only Version	801012
Kit with 12" Hose, Warm/Cool Version	801014

Dual-Supply Kit

Includes 8-inch extension hose, less quick-disconnect assembly	800044
Includes 15-inch extension hose, less quick-disconnect assembly	800986

PremAire Air-Line Filter Kit

Filter Kit	811940
Replacement filter element and gasket	811984

Escape Cylinder Kit (for rt hip)

Vortex Tube Kit

Dual-Supply Kit

Air-Line Filter Kit

Replacement PremAire Respirator Facepieces

Ultra Elite® Facepieces with Firehawk PTC MMR

With nosecup. Non-NFPA.	Small	Medium	Large
Hycar, with rubber head harness	10037650	10037648	10037652
Hycar, with EZ-Don head harness	10037651	10037649	10037653
Hycar, with SpeeD-ON head harness	10043419	10043415	10043433
Silicone, with rubber head harness	10043417	10043413	10043431
Silicone , with EZ-Don head harness	10043418	10043414	10043432
Silicone , with SpeeD-ON head harness	10043430	10043416	10043434

Ultra Elite Facepieces with Firehawk STC MMR

With nosecup. Non-NFPA.	Small	Medium	Large
Hycar, with rubber head harness	—	10039982	—
Silicone, with rubber head harness	—	10039983	—

PremAire Replacement Cylinder and Valve Assemblies

Five-minute aluminum (2261 psi)	818159
Five-minute carbon fiber (3000 psi)	10042420
Ten-minute aluminum (3000 psi)	10042423
Ten-minute carbon fiber (3000 psi)	802191

Other Replacement Parts

Replacement carrying case	813805

PremAire® Cadet Supplied-Air Respirator (PD)

The PremAire Cadet Respirator is a pressure-demand, Type-C, supplied-air respirator with a mask-mounted regulator that responds quickly to wearer's changing breathing requirements. The respirator can serve as a basic air-supplied device, or it can be easily upgraded to the versatile, state-of-the-art PremAire System. Designed for a variety of applications, PremAire Cadet Respirators can be used in non-IDLH (Immediately Dangerous to Life or Health) environments only. Operating inlet pressure is 60-100 psig. NIOSH approved. For more complete information, see Data Sheet 01-01-04.

Complete Assemblies

All listed configurations include: Ultra Elite facepiece (medium Hycar), rubber head harness and nylon belt assembly.

Hose	Fittings	Push-To-Connect Firehawk MMR		Slide-To-Connect Firehawk MMR	
		With Case	Less Case	With Case	Less Case
30" IP (intermediate pressure)	None	10054782	10054793	10054786	10054794
30" IP (intermediate pressure)	Snap-Tite AL	10054785	10054790	10054788	10054796
42" IP (intermediate pressure)	None	10054783	10054791	10054787	10054795
42" IP (intermediate pressure)	Snap-Tite AL	10054784	10054792	10054789	10054797

PremAire Cadet Escape Respirator—
Combination Supplied Air Respirator with Escape Cylinder Ⓟ Ⓓ

Size, Simplicity, and Economy

The PremAire Cadet Escape Respirator is designed to be versatile, comfortable, and affordable. A streamlined new design offers a first-stage regulator and cylinder valve within one assembly, creating a very small size and profile that is less likely to snag when working in tight places.

Low-profile escape cylinders can be worn on either the right or left hip. The Ultra Elite Pressure-Demand Facepiece or Advantage 4000 Facepiece with APR conversion capability offer choice of sizes and nose cups. The Firehawk® MMR Regulator let users choose from Push-To-Connect (PTC) or Slide-To-Connect (STC) attachments. All regulators feature a bypass and a choice of solid cover or purge.

The economical PremAire Cadet Supplied-Air Respirator with Escape Cylinder is a cost-effective respiratory protection solution for many industries. For ordering ease and flexibility, these systems will be sold as part-numbered kits or through MSA's Assemble-To-Order (ATO) System. The PremAire Cadet Supplied-Air Respirator with Escape Cylinder is NIOSH-approved as a combination supplied-air respirator and self-contained breathing apparatus.

Features and Benefits

- New one-piece first-stage regulator and cylinder valve;
  - *Combination cylinder valve and first stage pressure reducer*
  - *Very small size and profile*
  - *Regulator uses many of same parts as MSA FireHawk SCBA*
- Regulator body protects cylinder gauge – no need for rubber gauge guard, reduces size!
- Choice of cylinder hip placement allows workers freedom and versatility
- Two harness materials:
  - *Standard Nylon-ideal for chemical resistance*
  - *Kevlar-ideal in high heat environments or in areas with potential for sparks*
- Two attachments for keeping cylinder secure on belt
  - *Sturdy metal cylinder support bands*
  - *Nylon or Kevlar cylinder bags available for carbon fiber cylinders*
- Shoulder support strap incorporates hose keeper; regulator hose stays in place close to body, reduces chance of snagging
- Bracket/holder for second stage pressure regulator

Applications

- Chemical and petrochemical
- Hazardous materials
- Confined space entry
- Firefighting operations

PremAire Cadet Combination Supplied-Air Respirator System with Escape Cylinder Assemble-To Order Matrix

Type		Carrier & Harness Type		Pad Option		MMR Regulator		Escape Cylinder		Faceiece		Nosecup		Head Harness		Quick Disconnect		Case	
PC	PremAire Cadet Escape	1	Nylon, strap carrier, standard	0	None	A	FireHawk, Push-To-Connect, solid cover	A	5-minute aluminum	A	None	0	None	0	None	0	None	0	None
		2	Kevlar, strap carrier, standard	1	Shoulder	C	FireHawk, Slide, solid cover	B	10-minute aluminum	B	Ultra Elite, Hycar, small	1	Ultra Elite, medium	1	Rubber	A	Snap-Tite, aluminum	1	Hard plastic case
		3	Nylon, bag carrier, standard					C	5-minute carbon	C	Ultra Elite, Hycar, medium	2	Ultra Elite, large	2	Net	B	Snap-Tite, stainless steel		
		4	Kevlar, bag carrier, standard					D	10-minute carbon	D	Ultra Elite, Hycar, large					C	Snap-Tite, brass		
								E	15-minute carbon	E	Ultra Elite, silicone, small					D	Hansen, stainless steel		
						FireHawk regulators are not compatible with the Advantage 4000 Facepiece				F	Ultra Elite, silicone, medium					E	Hansen, brass		
										G	Ultra Elite, silicone, large	Nosecup is standard with the Advantage 4000 Facepiece				F	Foster, steel		
		Aluminum cylinders are not compatible with bag carriers								H	Advantage 4000, Hycar, small					G	Foster, stainless steel		
										J	Advantage 4000, Hycar, medium					H	Foster, brass		
										K	Advantage 4000, Hycar, large					J	Snap-Tite, locking, aluminum		
										L	Advantage 4000, silicone, small					K	Snap-Tite, locking, stainless steel		
										M	Advantage 4000, silicone, medium					M	Snap-Tite, locking, brass		
										N	Advantage 4000, silicone, large					N	Foster, locking, stainless steel		

Duo-Twin™ Respirators and Duo-Flo™ Respirators   CF

Duo-Twin Respirator

The Duo-Twin Respirator comes in a Constant-Flow version; Constant-Flow respirators are normally used where an ample air supply is available, such as that provided by an air compressor. The MSA Duo-Twin Respirator features an air-purifying cartridges, which also protect against a variety of contaminants. If the air supply should ever fail on the Constant-Flow unit, the user is automatically protected by the air-purifying cartridge.

Duo-Twin Respirator

This product is popular in the pharmaceutical, chemical, petrochemical, and nuclear industries. This MSA respirator should not be used in atmospheres containing less than 19.5% oxygen.

NIOSH approved.

Duo-Flo Respirator

The Duo-Flo Respirator comes in a Constant-Flow version; Constant-Flow Respirators are normally used where an ample air supply is available, such as that provided by an air compressor. Duo-Flo Respirators use the MSA Ultra Filter, a compact round filter cartridge that has a large effective filter area to provide low-breathing resisting. This cartridge has a P100 classification. Duo-Flo Respirators are popular in the pharmaceutical, chemical, petrochemical, and nuclear industries. This MSA respirator should not be used in atmospheres containing less than 19.5% oxygen. NIOSH approved.

Constant-Flow Duo-Flo Respirator

Ultra Filter P100 cartridge

Duo-Twin Respirator	
Complete Assembly*	
Complete with facepiece, breathing tube, adapter assembly/regulator, web belt and Foster steel plug and socket assembly.	
Constant Flow Duo-Twin Respirator	484087
Duo-Twin Plug	
Allows conversion of a Duo-Twin facepiece to a Twin-Cartridge Respirator.	
Duo-Twin Plug	486637

* Cartridges must be ordered separately. See page 14 for ordering information.

Duo-Flo Respirators	
Complete Assemblies (one P100 Ultra Filter is included)	
Constant Flow Duo-Flo Respirator w/full-face Ultravue Facepiece	466095
Constant Flow Duo-Flo Respirator w/half-mask Comfo Facepiece	466097

Replacement Cartridges for Duo-Flo Respirators	
Round Ultra FIlter Cartridge, box of 6	10010420
Round Ultra Filter Cartridge, box of 6	10010421

Constant-Flow Air-Line Adapter Assemblies		
Designed to deliver the required air flow to the facepiece at an inlet pressure range of 35-40 psig for hose lengths of 8 to 300 feet. The adapters include an integral belt clip and male and female quick-disconnect assemblies.		
Quick-Disconnect	**Duo-Twin**	**Duo-Flo**
Snap-Tite (AL) assembly	483526	466077
Snap-Tite (Brass) assembly	483530	476919
Snap-Tite (SST) assembly	483531	476920
Foster (Steel) assembly	483528	469869
Foster (Brass) assembly	483532	476918
Hansen (Brass) assembly	483529	476922
Hansen (SST) assembly	483533	476921
Duff-Norton assembly	483534	476923
Cejn assembly, locking	483535	479114
Snap-Tite (AL), locking	483536	479115

Abrasi-Blast™ Supplied-Air Respirator CF

The Abrasi-Blast Respirator provides respiratory and upper body protection for workers in shipbuilding, the construction industry, utilities, and other applications where blasting with abrasives is performed.

A complete Abrasi-Blast Respirator is made up of a hood, facepiece with lens housing, breathing tube, cover lens cartridge assembly, flow-control device, approved air-supply hose, and support belt.

During blasting operations, the lens of the Abrasi-Blast Respirator is protected by 2 to 4 flat glass cover lenses mounted in a special foam material. Each cover lens is removed by integral pull tabs when it becomes so abraded that vision is reduced. There is no need to stop to change lenses, as is necessary with most conventional blasting hoods. Approved by NIOSH.

 For more complete information, see Bulletin 0112-37.

Complete Assemblies with Hypalon Hood

Includes one lens cartridge consisting of four 0.06-inch untempered glass cover lenses, flow control device, Snap-Tite aluminum quick-disconnect fitting, adjustable valve-connector body, facepiece (medium) with dual exhalation valves and lens housing, breathing tube, web belt, and air-hose connector.

	Hypalon Hood with Collar	
Inlet Pressure Range	Waist-Length	Shoulder-Length
10-15 psi	468716	468720
35-40 psi	468718	468722
Abrasi-Blast Duo-Flo	478116	478117

Lens Cartridges (contains 12 cartridges per carton)

Description	Recommended use	Part No.
0.06-in thick, untempered lens (4 lenses in each cartridge)	light blasting	473238
0.06-in thick, tempered lens (4 lenses in each cartridge)	light blasting plus added protection against glass breakage	473240
0.09-in thick, untempered lens (3 lenses in each cartridge)	medium blasting	473798
0.09-in thick, tempered lens (3 lenses in each cartridge)	medium blasting plus added protection against glass breakage	473800
0.12-in thick, untempered lens (two layers laminated) (2 lenses in each cartridge)	heavy blasting	473802
0.12-in thick, untempered lens (two layers laminated) (3 lenses in each cartridge)	heavy blasting	481742

Hood Options

	Hypalon	Duck Cloth	Neoprene	Knit Back/ Hypalon Front
Waist-length	468724	480697	486303	—
Chest-length	—	480699	—	—
Shoulder-length	468725	—	486304	486329

Note: The Abrasi-Blast Respirator is available with a duo-flow option. Please call MSA Technical Support for complete ordering information.

Note: Assemblies can be specially ordered with different options.

Constant Flow Air-Line Respirator CF

Constant Flow Air-Line Respirator with Ultravue Facepiece

Constant Flow Air-Line Respirator with Ultra Elite Facepiece

Constant Flow Air-Line Respirator with Comfo Facepiece

Constant Flow Air-Line Respirator with Welder's Comfo Facepiece

Constant Flow Air-Line Respirators are designed to maintain a slight positive pressure of air inside the facepiece, whether the wearer is inhaling or exhaling. This helps to prevent contaminants from seeping in around the facepiece, even if there should be small breaks in the face-to-facepiece seal. The complete respirator assembly is available with Ultravue or Ultra Elite Full Facepiece, Comfo Half-Mask Facepiece, or Comfo Welder's Facepiece; breathing tube; web support belt; and air-flow control valve with quick-disconnect assembly. The Constant Flow Respirator is used in non-IDLH environments. NIOSH approved. For more complete information, see Bulletin 0112-38.

Complete Assemblies

Choose facepiece, control valve, and quick-disconnect assembly. Comes with breathing tube and a web support belt. For optional PVC belt, see Accessories on page 44.

Quick-Disconnect	Ultra Elite Facepiece	Ultravue Facepiece	Comfo Facepiece	Welder's Comfo Facepiece
High-Pressure Control Valve (35-40 psig inlet pressure for 8-300 ft of hose)				
Snap-Tite aluminum	810829	460863	460865	460862
Foster steel	810831	461717	480466	480600
Duff-Norton brass	810834	486258	†	†
CEJN Locking chrome-plated brass	810832	480629	480631	480671
Snap-Tite Locking hard-coat anodized aluminum	810833	480633	480635	480672
Low-Pressure Control Valve (10-15 psig inlet pressure for 8-50 ft of hose)				
Snap-Tite aluminum	806775	463300	463302	463281
Foster steel	806776	480472	480474	480468
Hansen brass	806779	484836	484837	†
CEJN Locking chrome-plated brass	806777	480637	480639	480645
Snap-Tite Locking hard-coat anodized aluminum	806778	480641	480643	480646
With Cool-only Vortex				
Snap-Tite aluminum	†	494439	495462	N/A
With Warm/Cool Vortex				
Snap-Tite aluminum	†	495785	†	N/A
Direct-Connect for 3/8" Airline				
Snap-Tite aluminum	806791	488073	488077	488081
Foster Steel	806792	488074	488078	488082
Cejn Chrome Locking	806793	488075	488079	488083
Direct-Connect for 1/2" Airline				
Snap-Tite aluminum	806795	488089	488091	488093
Cejn Chrome Locking	806796	488090	488092	488094

† Available by special order only. High-pressure control valves are also available with the following special order quick-disconnects: Snap-Tite brass or stainless steel, Foster brass, and Hansen brass, or stainless steel. Low-pressure control valves also available with: Snap-Tite brass or stainless steel, Foster brass, Hansen brass, and Duff-Norton brass. Please call your nearest MSA distributor for complete ordering information.

Note: Facepieces can also be ordered in silicone instead of Hycar rubber. Three sizes of facepieces are available. For belts, MSA Air-Supply Hose and other accessories, see pages 43–44.

For separate quick-disconnect plugs and sockets, see page 42. See page 41 for typical Pressure Demand Air-Line and Constant Flow Air-Line Systems setup.

Versa-Hood™ Air-Supplied Hood CF

The Versa-Hood Air-Supplied Hood is an inexpensive hood respirator which may be used anywhere a Type-C air-supplied hood is required. This versatile hood is available in two lengths (shoulder- and waist-length) and two materials (Tyvek and Saranex). All Versa-Hood respirators can be used with either a plant air system or personal air compressor.

When head protection is needed, a special three-point Velcro system secures the hood to an MSA V-Gard Cap. The hood suspensions (basic or ratchet versions) are easily adjustable and stable, minimizing the need for a chin strap. The hood is designed to be disposable, thus eliminating the need for cleaning, and a twin-lens system extends the life of the hood. MSA also offers a package of ten replacement lenses. An air-distribution system keeps the lens fog-free. NIOSH certified. For more complete information, see Data Sheet 01-02-01.

Versa-Hood Assembly and 3/8-inch Hose System with Direct Connectors
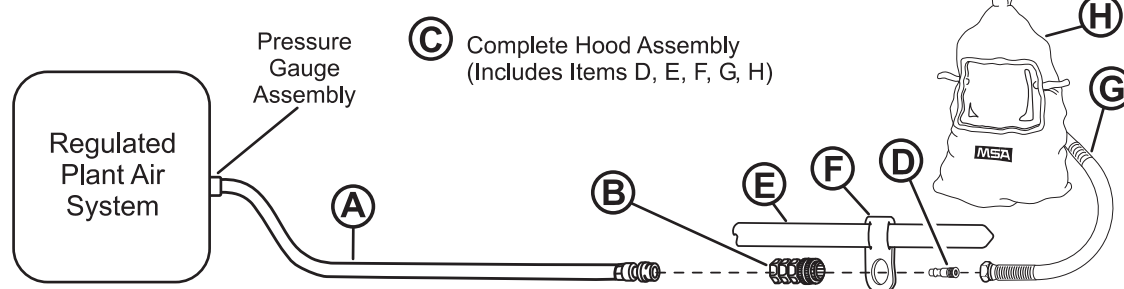
Versa-Hood Assembly and 3/8-inch Hose System w/Direct Connectors	
Air-Supply Hose– see page 43 (A)	
Socket assembly for 3/8-inch hose system (B) - Snap-Tite	455019
Socket assembly for 3/8-inch hose system (B) - Foster	467044
Complete Hood Assembly (C) (with Tyvek Hood), shoulder length, Snap-Tite aluminum plug	484689
Complete Hood Assembly (C) (with Tyvek Hood), shoulder length, Foster steel plug	484690
Complete Hood Assembly (C) (with Tyvek Hood), waist length, Snap-Tite aluminum plug	484693
Complete Hood Assembly (C) (with Tyvek Hood), waist length, Foster steel plug	484694

Hood Assembly Components	
Male plug, Snap-Tite (D)	66273
Male plug, Foster	56549
Hood hose (X-inch NPT) (G)	482702
Shoulder-length Tyvek hood (H)	482612
Waist-length Tyvek hood	482610
Belt holder (F)	482618
PVC support belt (E)	473902

Note: This Versa Hood Assembly would typically require a compressor that puts out between 10 to 12 cfm per person at 10 to 40 psi. Required inlet pressure is based on airline hose length.

Versa-Hood Assembly and 3/8-inch Hose System with Adjustable Valve Connectors
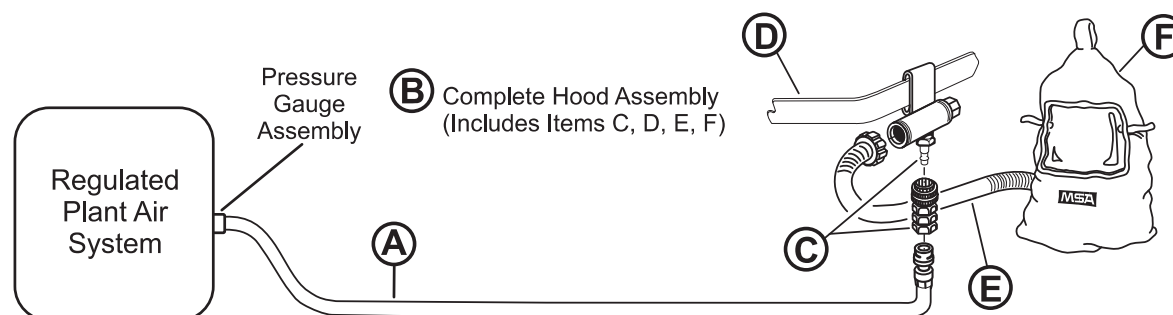
Please call your nearest MSA Distributor for complete ordering information

For airline hose, please see page 34.

Versa-Hood Assembly and 3/8-inch Hose System with Adjustable Valve Connectors (requires a compressor output of 10 to 12 cfm per person at 55 to 60 psi)		
Air-Supply Hose– see page 43 (A)		
Complete Hood Assembly (B) (with Tyvek Hood)	Shoulder Length	Waist Length
Adj. valve connector w/ Snap-Tite Quick-Disconnect	482823	482827
Adj. valve connector w/ Foster Quick-Disconnect	482824	482828
Cool-only vortex less Quick-Disconnect	494425	494427
Warm/cool vortex less Quick-Disconnect	495782	—

Hood Assembly Components	
Adj. valve connector for 3/8-in hose system, Foster (C)	471814
Adj. valve connector for 3/8-in hose system, Snap-Tite	460814
Hood hose w/ coupling nut for adj. valve connector (E)	482703
Shoulder-length Tyvek hood (F)	482612
Waist-length Tyvek hood	482610
PVC support belt (D)	473902
Vortex Tube Assemblies - for use with plant air systems ONLY	
Warm/Cool vortex, less Quick-Disconnect (requires 25 cfm at an inlet pressure between 85 to 120 psi based on hose length)	495701
Cool only vortex, less Quick-Disconnect (requires 15 cfm at an inlet pressure between 75 to 90 psi)	494392

Portable Air-Supply Systems

The TransportAire™ System

Low-Pressure Configuration

The TransportAire System is available in two versions: one for high-pressure cylinders and one for low-pressure cylinders. Both versions consist of an impact-resistant handle with urethane-coated nylon straps that fit around a standard MSA SCBA air cylinder (purchased separately), a regulator, and a regulator-to-hose adapter. An Audi-Larm device is provided standard on the high-pressure system and is available as an option for the low-pressure system. Both systems are designed for use with MSA supplied-air respirators equipped with a dual-supply option.

A major advantage of the dual-supply option is improved mobility; workers need not remain tethered to a single air-supply hose throughout a work period.

For more complete information, see Bulletin 0114-21.

The PortAire® System

The PortAire System holds two standard SCBA air cylinders to provide firefighters, industrial personnel, confined-space workers, and others with a portable, compressed-air source any time an air-line device is required.

Designed for use with MSA pressure-demand supplied-air respirators, including dual-purpose self-contained breathing apparatus (SCBA), the PortAire System consists of a compact air-pressure regulating system housed in a lightweight, yet durable, anodized aluminum frame.

For more complete information, see Bulletin 0114-21.

Air Supply Hose*	
8-ft Coiled Nylon Hose	491513
Air Supply Systems	
TransportAire Portable Air-Supply System—Low-Pressure	
TransportAire Assembly complete with Cylinder Carrier, Regulator, and Regulator-to-hose Adapter	816693
Option	
Low-Pressure Audi-Larm Assembly	85078
TransportAire Portable Air-Supply System—High-Pressure	
TransportAire Assembly complete with Cylinder Carrier, Regulator and Regulator-to-hose Adapter, and High-Pressure Audi-Larm	812217
PortAire Portable Air-Supply System	
PortAire Portable Air-Supply System with Audi-Larm low-pressure warning device, high-pressure regulator, and carrying frame with air-supply hose* retainer (cylinders and air-line hose not included)	807052
Quick-Fill Kit	807053
Wheeled Cart for PortAire Portable Air-Supply System	10017089
Cylinders	
High-Pressure (4500 psig)	
Stealth H-60, 60-min	807588
Stealth H-45, 45-min	807570
Stealth H-30, 30-min	807587
Fully-wound Composite, 60-min	801285
Fully-wound Composite, 30-min	801287
Kevlar, 60-min	807002
Kevlar, 45-min	806933
Low-Pressure (2216 psig)	
Stealth L-30, 30-min	807586
Hoop-Wrapped, 30-min	469619
3AL (Aluminum), 30-min	809872
Composite II, 30-min	801279
Low-Pressure (3000 psig)	
Stealth L-30+, 30-min	816115
Composite III, 30-min	801289

*For complete listing of air-supply hose, see page 43. For quick-disconnect fittings, see page 42.

Air-Line Respirators: Industrial

TransAire® 5, TransAire® 10, and Custom Air V® Escape Respirators

Quick Escape from IDLH Atmospheres

When you need to bail out quickly, the TransAire 5 and TransAire 10 Escape Respirators deliver a consistent air supply at 40 lpm (liters per minute). This standard-flow rate makes for a smooth escape in normal aerobic escape applications. The TransAire 10 Escape Respirator is pressurized to 3000 psig, and the TransAire 5 Escape Respirator is pressurized to 2216 psig. The compact units employ aluminum cylinders that can withstand exposure to temperatures from 0° to 160°F. Despite their durability, the units are extremely lightweight.

The Custom Air V Escape Respirator is designed with a high flow rate and meets stringent air flow requirements for extremely aerobic escape applications. It provides a five-minute, constant air flow at 72 lpm and is available with either an aluminum or a carbon fiber cylinder.

TransAire and Custom Air V Complete Assemblies	
TransAire 5 Escape Respirator complete (includes aluminum cylinder, carrier, hood tube, hood assembly)	10008292
TransAire 10 Escape Respirator complete (includes aluminum cylinder, carrier, hood tube, hood assembly)	10008293
TransAire 10 Escape Respirator complete (includes fully-wound carbon fiber cylinder, carrier, hood tube, hood assembly)	10083327
Custom Air V Escape Respirator complete (includes fully-wound carbon fiber cylinder, carrier, hood tube, hood assembly)	484353
Custom Air V Escape Respirator complete (includes aluminum cylinder, hood tube, hood assembly)	802197
Accessories	
Single-unit wall-mounting case	696192
Two-unit wall-mounting case	696193
Single unit carrying case, yellow polyethylene, with handle, for all escape respirators	10012530

Two unit and single unit wall mounting case - chemical resistant ABS plastic case resist weathering, moisture, and corrosion to ensure escape respirators stay in ready-to-use condition.

Single unit carrying case

Typical Air-Line Systems

Pressure-Demand System

Select One Outlet Connection: E1, E2 or E3

Pipe sealing tape required. Begin at second thread and wrap 1 to 1½ turns clockwise.

* 2400 psig Cascade System
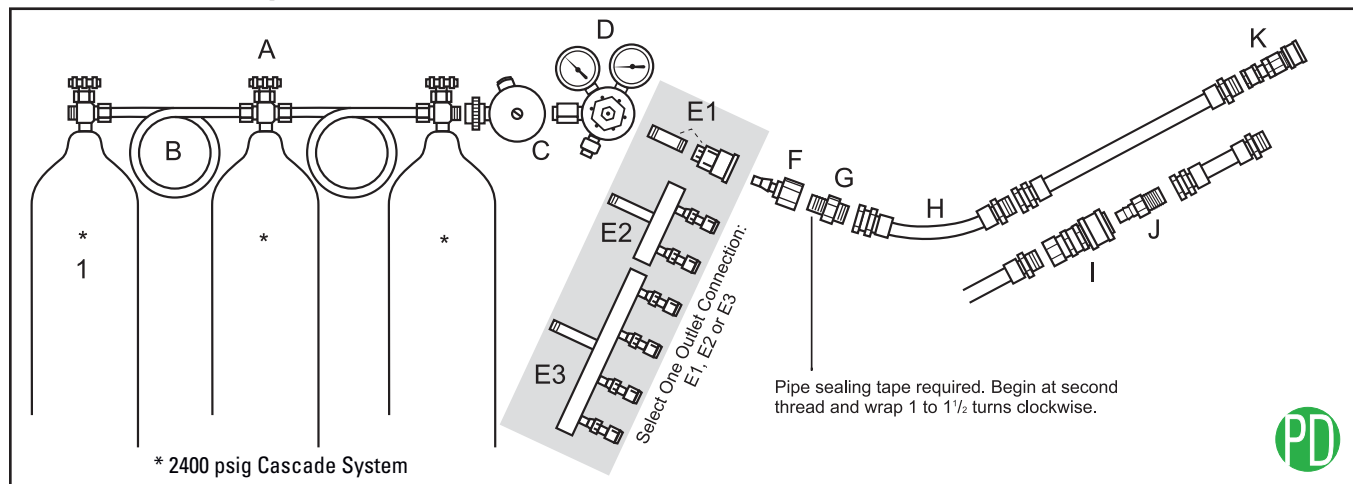
Note: DO NOT use teflon sealing tape on straight threaded connections with O-ring seals.

Note: Cascade cylinders are not normally used with a constant-flow system due to excessive air usage—one large (300 cu ft) cylinder would last one working person only about 15 minutes. Therefore, using cascade cylinders with a pressure-demand system is recommended.

Constant-Flow or Pressure-Demand System

Pressure Gauge

Outlet Fitting

Pressure Reducer

PLANT AIR COMPRESSOR

AIR PURIFICATION SYSTEM

CO MONITOR

Select One Outlet Connection: 5A, 5B, or 5C

Locking Quick-Disconnect
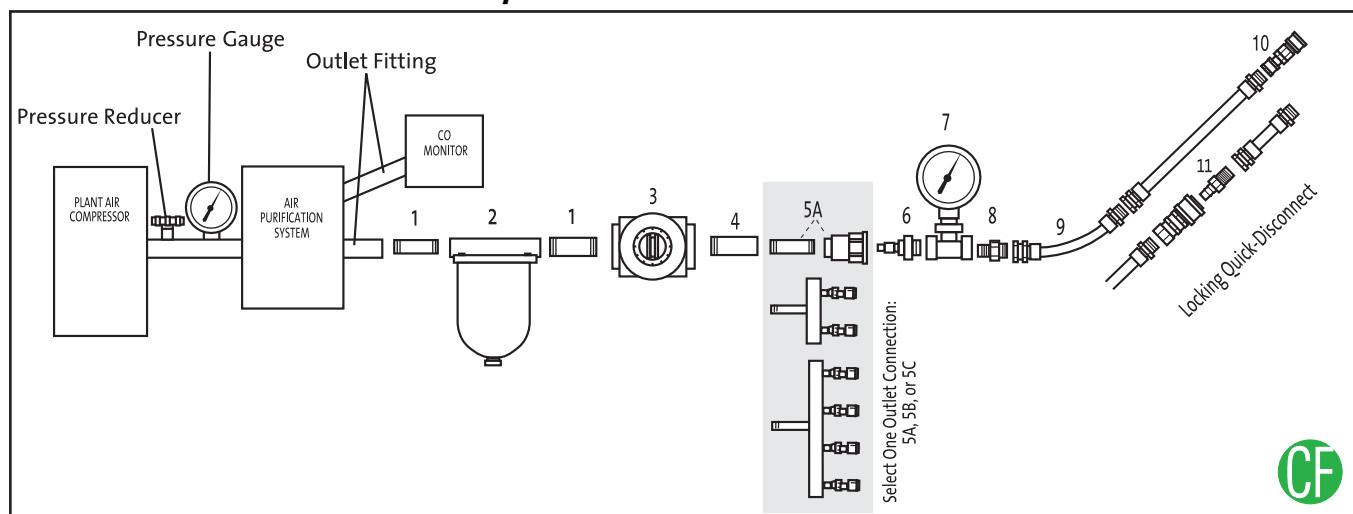
Pressure-Demand System			
	Description	Page	Page 42 Column No.
A	Tee Block	43	—
B	Air Pigtail	43	—
C	Audi-Larm	43	—
D	Press. Regul.	43	—
E1	Female Socket	42	1
E1	Nipple - part no. 459867	—	—
E2–3	Manifolds	43	—
F	Male Plug	42	2
G	3/4" NPT Male x 1/4" NPT Male	42	3
H	MSA Air Hose	43	—
I	Quick Disconnect (Female)	42	Yellow Chart
J	Quick Disconnect (Male)	42	Yellow Chart
K	Female Socket	42	5

Constant-Flow System			
	Description	Page	Pg. 42 Column No.
1	Nipple-DBL male 1/2" NPT - part no. 68833	—	—
2	Filter	43	—
3	Regulator	44	—
4	Bushing-1/2" male NPT x 1/4" female NPT - part no. 625528	—	—
5A	Nipple-DBL male 1/4" NPT - part no. 459867	—	—
5A	Female Socket	42	1
5B/C	Manifolds	43	—
6	Male Plug	42	4
7	Inlet Gauge	43	—
8	3/4" NPT Male x 1/4" NPT Male Union Adapter	42	3
9	MSA Air Hose	43	—
10	Female Socket	42	5
11	Quick Disconnect	42	Yellow Chart

Quick-Disconnects for Air-Line Respirators and Air-Supplied Hoods

Quick-disconnect assemblies connect air-supply hoses to the manifold and to the air source. If you want to use a quick-disconnect to interconnect lengths of air supply hose, you must use a locking-type quick disconnect— specifically, the locking quick disconnects listed in the yellow box at the bottom of this page. For more complete information, see the Pocket Guide to Air-Line Systems (Bulletin 0114-14-MC).

Quick-Disconnects and Adapters   AL-Aluminum; S-Steel; SST-Stainless Steel; BR-Brass

QUICK-DISCONNECT TYPE	Interchangeability	1 Female Socket 1/4" NPT	2 Male Plug w/Female 1/4" NPT	3 Union Adapter 1/4" NPT x 3/4" UNF	4 Male Plug w/Male 1/4" NPT (used when connecting Inlet Pressure Gauge)	5* Female Socket Assy. (used to connect Air-Supply Hose to Male Plug on Respirator)
Snap-Tite (AL)	C	66272	66274	69542	66273	455019
Snap-Tite (SST)	C	629673	629672	808358	629671	471778
Snap-Tite (BR)	C	630305	630307	69542	630306	471777
Duff-Norton (BR)	—	630308	630310	69542	630309	471780
Hansen (SST)	A	628768	628208	808358	473502	471779
Hansen (BR)	D	630311	630313	69542	630312	471501
Foster (S)	B	628770	55716	69542	56549	467044
Foster (SST)	B	636459	636460	808358	———	801016
Foster (BR)	A	629980	629981	69542	473501	470194
Schrader (S)	B	See Foster(S)	See Foster(S)	See Foster(S)	See Foster(S)	See Foster(S)
CEJN Locking (Chrome-Plated—BR)	E	631870	479026	69542	479020	479001
CEJN Locking (Chrome)	E	———	479026	69542	479020	476956
Snap-Tite Locking (AL)	F	———	479027	69542	———	479032
Snap-Tite Locking (SST)	F	———	479028	808358	479022	479033
Snap-Tite Locking (BR)	F	———	479029	69542	479023	479034
Foster Locking (SST)	D	636473	637851	808358	———	800805

† Fittings with the same letter code are interchangeable.

* Socket assy consists of socket from column 1 and brass union adapter P/N 69541 (¾'' female x ¼'' npt male). Exception: All SST fittings have SST Union P/N 808360.

Locking Quick-Disconnects

Locking quick-disconnects must be used to interconnect lengths of MSA Air-Supply Hose. For most systems, you can use up to 12 sections of hose to make up the maximum length.

CEJN Locking Quick-Disconnect Assembly, Socket and Plug (Chrome)	479009
CEJN Locking Female Quick-Disconnect Socket (Chrome)	476956
CEJN Locking Male (w/ Male 3/4" NPT) Quick-Disconnect Plug (Chrome)	476955
Snap-Tite Locking Quick-Disconnect Assembly, Socket and Plug (AL)	479010
Snap-Tite Locking Female Quick-Disconnect Socket (AL)	479032
Snap-Tite Locking Male (w/ Male 3/4" NPT) Quick-Disconnect Plug (AL)	479015
Snap-Tite Locking Quick-Disconnect Assembly, Socket and Plug (SST)	479011
Snap-Tite Locking Female Quick-Disconnect Socket (SST)	479033
Snap-Tite Locking Male (w/ Male 3/4" NPT) Quick-Disconnect Plug (SST)	479016

CEJN Quick-Disconnect Socket & Plug Assembly

CEJN Q-D Socket   CEJN Q-D Plug

Snap-Tite Quick-Disconnect Socket & Plug Assembly

Snap-Tite Q-D Socket   Snap-Tite Q-D Plug
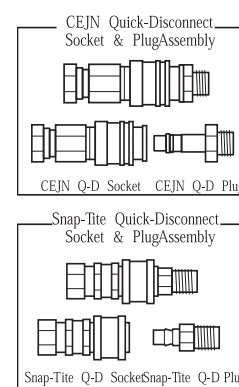
Air-Line Respirator Accessories

Approved Air-Supply Hose

Air-Supply Hose Temperature Ranges

Neoprene	*PVC*	*Nylon*
-25° to 212°F	32° to 120°F	0° to 160°F

MSA 3/8-inch ID Air-Supply Hose is available in smooth, reinforced, lightweight polyvinylchloride (PVC); chemical-resistant black neoprene; or smooth, coiled nylon. Must be used with respirators in this section to maintain NIOSH certifications. Quick-Disconnects are sold separately (see p. 42).

Air-Supply Hose

Material	Hose Coupling	100ft	50ft	25ft	15ft	8ft
Neoprene	Brass	—	455022	455021	455020	481071
Neoprene	Stainless Steel	—	481080	481079	481078	481077
PVC	Brass	484225	471513	471512	471511	481051
PVC	Stainless Steel	—	481060	481059	481058	481057
Coiled Nylon	Brass	—	474043*	491515*	491514*	491513*
Hose Reel - 50 feet (includes 50 ft of 3/8" neoprene hose P/N 455022)					72444	

* Recommended usable length, 4-25 ft.

Cascade System Accessories

The following components are used to assemble a 2400 psi cascade system, which consists of a bank of respirable-air cylinders (user-supplied) that supply a flow of air to dual-purpose air masks, or other pressure-demand air-supplied respirators. Air-supply hoses are listed separately at right.

Cascade System Accessories

Audi-Larm™ Warning Device, low-pressure (CGA 346), 0–3000 psig	85078
Audi-Larm™ Warning Device, high-pressure (CGA 347), 0–5500 psig	492307
Air Coupler Tee – low-pressure CGA 346, 0–3000 psig	68850
Air Pigtail – low-pressure CGA 346, 0–3000 psig	68851
Air Cylinder Pressure Regulator, dual-gauge, 0-3000 psig	68858
High-Pressure Air Cylinder Regulator, dual-gauge, 0-5500 psig	633352
Male Air-supply Hose Adapter for Foster Quick-Disconnects (for PVC hose)	55716
Union Adapter (required to attach male plug)	69542

Breathing Air Distribution System

This system filters, regulates and distributes plant air to as many as four air-line respirator users. A sealed, rugged, stainless steel case prevents contamination of interior components. External controls allow water condensation to be drained from the filter bowl and the manifold pressure to be adjusted. Caution: The system does not remove carbon monoxide. Only Grade D quality air should be used as input.

Breathing Air Distribution System

Breathing Air Distribution System, less quick-disconnects (must be ordered separately)	488113
"Toolbox" Carrying Handle Bar	488118

Portable Air Filter and Regulator ("Black Box")

This system contains an airline filter, pressure regulator and a 4-outlet manifold in a lightweight aluminum case. For use with inlet pressures up to 125 psig. The outlet pressure is adjustable from 10 to 125 psig. The manifold comes with Snap-Tite (AL) quick-disconnects.

Portable Air Filter and Regulator

Portable Air Filter and Regulator	92760

Manifolds

Required when using multiple (2–4) respirators from a single air source; some of these manifolds have quick-disconnect assemblies with automatic shut-off outlets. Note: Gauge required when greater than 10' between airline point of connection and the regulator.

Manifolds

No. of Outlets	Foster Quick-Disconnect	less Quick Disconnect
4	47370	488914
2	84416	84418

Inlet Pressure Gauge

MSA offers an inlet pressure gauge that enables a user to check pressure at the inlet of the MSA Air-Supply Hose, thereby assuring that air pressure is within the certified range. The gauge is supplied with Quick-Disconnect fittings.

Inlet Pressure Gauge

Inlet Pressure Gauge w/ Snap-Tite fitting	476734
Inlet Pressure Gauge w/ Foster or Schrader fitting	476735
Inlet Pressure Gauge w/ Duff-Norton fitting	476736
Inlet Pressure Gauge w/ Hansen fitting	476737
Inlet Pressure Gauge less Quick-Disconnect**	492586

**See Column 4 plug and Column 3 union on page 40.

Air-line Filter

The MSA air-line filter removes a minimum of 99% of 0.3 micron and larger particulates, including dusts, mists, fumes, smoke, and petroleum vapors. Caution: It does not remove carbon monoxide. The air-line filter can be used at inlet pressures up to 125 psig. The pressure drop is one psig at a maximum rated air flow of 25 cfm.

Air-Line FIlter

Air-line Filter - with 1/2" NPT female inlet and outlet	81857
Air-line Filter - with 3/4"-16 straight threads	488041
Replacement Filter Kit	484923

Air-Line Respirators: Industrial

Pressure Regulator

MSA's pressure regulator is used with a plant air compressor system to reduce compressor pressure to the desired operating pressure. The regulator maintains pressure on the outlet side until readjusted for use with inlet pressure of up to 125 psig.

Pressure Regulator	
Pressure Regulator	66716

Nosecups

Molded from a soft rubber compound resistant to facial oils, the nosecup helps reduce the possibility of lens fogging. The nosecup is particularly effective under conditions of high humidity and/or low temperatures by inhibiting contact of the moist exhalation with the

Nosecups for Ultra Elite Facepieces

facepiece lens. A nosecup can be easily affixed to the facepiece without tools, and any size nosecup may be installed in any size Ultravue or Ultra Elite Facepiece resulting in a customized facepiece for more comfortable use.

Nosecups	Small	Medium	Large
Ultra Elite	—	810412	810413
Ultravue	813138	813139	813140

Spectacle Kits for Full-Facepiece Respirators

For use by workers who must wear corrective lenses, the Spectacle Kit can be easily inserted into the facepiece. The kit includes a wire support, rubber guide, and pair of metal-frame

Side Support Spectacle Kit for Ultra Elite Facepiece

Center Support Spectacle Kit for Ultra Elite

spectacles. Desired adjustment is obtained by moving the spectacles in and out of the rubber guide and up and down the wire support. The Ultra Elite spectacle frame has an S-7 shape and a 48-mm lens size. The Ultravue spectacle also has an S-7 shape, but has a 44-mm lens size. Universal Bridge Corrective Lenses can be obtained from local sources. The Spectacle Kit can be used in conjunction with a nosecup. There are two kits for the Ultra Elite facepiece; one uses a side wire support, while the other uses a center support to position the unit (spectacle adjustments are similar).

Spectacle Kits	
Ultra Elite Spectacle Kit (side wire support)	804638
Ultra Elite Spectacle Kit (center support)	493581
Ultravue Facepiece Spectacle Kit	454819

Cover Lens

Protects the facepiece lens from scratches during storage, handling, and use.

Cover Lens		Ultra Elite	Ultravue
Clear cover lens, pkg of 25		491500	456975
Smoke-tinted cover lens, pkg of 25		805456	480326

Welder's Adapter and Welder's Hood

For eye protection in welding applications where respiratory protection is required, a welder's adapter can be easily installed over a facepiece lens. The clip-on style adapter can be easily removed if needed, whereas the integral adapter model is used in place of the facepiece lens. Both models are made of polycarbonate and feature a flip-up lens with large $4^1/_2$-inch x $5^1/_4$-inch (11.4 cm x 13.3 cm) vision area.

The Kevlar Welder's Hood fits over the Welder's Adapter to protect the head, neck, and shoulders from sparks.

Welder's Accessories	
Welder's Adapters come complete with cover lens, less filter plate	
Clip-On Welder's Adapter for Ultra Elite Facepiece	472859
Clip-On Welder's Adapter for Ultravue Facepiece	470786
Integral Welder's Adapter for Ultra Elite Facepiece	806482
Rayfoe Filter Plate, shade 6, heat-treated	38346
Rayfoe Filter Plate, shade 10, heat-treated	38347
Rayfoe Filter Plate, shade 12, heat-treated	38277
Rayfoe Filter Plate, shade 14, heat-treated	38348
Welder's Hood	486328

Support Belts

MSA PVC belts are easy to decontaminate. If decontamination is not a factor, users may opt for an uncoated nylon web belt.

PVC belt　　*urethane belt*

nylon web belt

Support Belts	
Polyurethane-coated Nylon Support Belt, black	492827
PVC Support Belt, clear	473902
Web Support Belt (uncoated)	9961

MSA Confidence Plus® Germicidal Cleaner

Mix with warm water for a germicidal cleaner that is effective against various micro-organisms including immunodeficiency virus Type 1 (HIV-1, associated with AIDS). EPA-approved for use on safety equipment.

Cleaner	
MSA Confidence Plus Germicidal Cleaner, in 32 oz. bottle	10009971

A Pocket Guide to Air-Line Systems

This pocket-size booklet shows complete hook-ups of the various MSA air-line systems, both constant flow and pressure demand, from the air source to the respirator connection. Below each illustration, the individual parts of the system are identified by title and part number. The reader is then referred to other pages in the guide for more information about the specific MSA components. To order your copy, request Bulletin 0114-14-MC.

FireHawk M7 Air Mask

New!

Through the NFPA, firefighters have strived to improve the durability and performance of SCBA and PASS devices.

To this end, the new NFPA 2007-edition standards for self-contained breathing apparatus and personal alert safety systems call for a PASS alarm that performs at 500º F, electronics that remain waterproof after six immersion cycles at 1½ meters depth of water and a 350°F heat exposure, and electronics that function after a rigorous 3-hour tumble test. They also raised the bar on voice communication capability, now requiring a minimum score of 85% at a 10-ft distance (allowing an electronic or mechanical system). *(Previously this was 72% at 5 feet.)*

MSA's new **FireHawk M7 Air Mask** represents a true technological achievement in critical personal protection. As firefighters determined the safety requirements that would be needed to meet the new NFPA 1981 and 1982–2007-edition standards, MSA's engineering teams began designing the solutions.

The new FireHawk M7 Air Mask emerged with seven **life–safety** design components built on a **modular** Air Mask platform, developed to **exceed the new NFPA 2007** requirements and provide firefighters with the highest-quality SCBA currently available.

Self-Contained Breathing Apparatus

1. TAKING THE HEAT

Although MSA PASS alarms have performed in extreme temperatures for more than a decade, a top priority was to design an alarm that could **really take the heat!** The new M7 alarm *(patent pending)* was developed in cooperation with prominent university acoustic experts, resulting in an emitter that exceeds 95 decibels with solid performance at the NFPA 500F test! Once again, giving you that lifesaving edge in the face of danger.

2. VIRTUALLY "BULLET-PROOF" ELECTRONICS

Like an armor shield, the M7 HUD, Power Module, and Control Module are encased in a proprietary high-temperature impact-grade polymer, providing the highest possible protection against impact and water ingress. - Electronics enclosures are permanently sonically **welded** to a hermetic standard and use a high-pressure O-ring to ensure a consistent water-tight seal. The new M7 electronics are virtually **"bullet-proof"** against fire-ground hazards.

3. STRAIGHT-TALK COMMUNICATIONS

We've got you covered with communications, starting with a **high-performance mechanical speech diaphragm**, performing so well that it may likely serve as a stand-alone solution to meet the latest NFPA communications requirements! Backing the mechanical diaphragm is an **electronic amplifier** with an internal facepiece microphone for ultimate clarity, a digital signal processor to eliminate feedback even when shouting, three volume levels, and an auto-off feature after 20 minutes of no-use to save batteries. The new Air Mask speaks loud and clear when it comes to communications.

4. FIREGROUND MANAGEMENT

Firefighter accountability systems have never before been as practical, complete, and user-friendly as the MSA **M7 Accountability System**. It's based on the ICM® TxR Unit introduced in mid-2006, which has thousands of systems deployed in virtually every type of fire department, and they're performing phenomenally! It displays a full array of visual and audible information for up to 100 firefighters within a one-mile-line-of-site – exactly what incident commanders wanted. Record keeping is also made easy by downloading reports. This crown jewel is available only from MSA!

5. EXTENDED PROTECTION

The new FireHawk M7 Air Mask is not your typical SCBA. Firefighters need to be prepared for the unexpected, and emergency egress from a 2nd-floor or higher can be impossible without the right safety equipment. That's why the new M7 Air Mask offers an NFPA- compliant integrated rappelling system, called the Rescue Belt, providing firefighters with one more lifesaving option in the face of danger.

"Above and beyond" protection is also provided with the CBRN FireHawk MMR. The CBRN FireHawk includes a positive-protection Tetraplex™ shield, to prevent contact between chemical warfare agents and the most vulnerable component of regulators, their thin elastomeric diaphragm. Other "air-wash" approaches may pass in laboratory conditions. The shield provides positive protection against all potential conditions.

External hazards are bad enough without having concerns of spreading illness among firefighters through shared-use SCBA. The Ultra Elite® facepiece protects you against user cross-contamination with MSA's inhalation check-valve: a **"must have"** in modern safety equipment.

**Designed to meet the new NFPA 2007–edition standard.
Determined to exceed your
safety equipment expectations!**

6. LIGHTWEIGHT AND EASY TO USE

Firefighters already have enough weight to carry and gear to maintain, so MSA engineers set out to lighten the load of components, reduce parts counts, **simplify maintenance**, maximize user comfort, and **modularize** the design. The FireHawk M7 Air Mask has a lightweight polymer backplate, with quick-release harness straps, an error-proof cam-lock cylinder attachment, fast change-out electronic components, a large swiveling lumbar pad, and regulators that will fit in the palm of your hand (**less than 30 parts** for the MMR and 14 for the 1st stage). Our time-tested Ultra Elite facepiece has unbeatable comfort, visibility, communications, cross-contamination protection, fit, and seal.

7. PLATFORM FOR THE FUTURE

The FireHawk M7 Air Mask is designed to accept **future technology upgrades**. Included in every M7 electronics ensemble is a 2.4GHz **personal wireless network**, a network that transmits and receives encrypted information over a short-range on a firefighter's body.

This new wireless feature provides the capability to add on future technology that can provide additional information back to incident command through the FireHawk M7 Accountability System. Software can also be upgraded wirelessly in the field, through the M7 wireless network. You never have to worry about radio interference either – we have you covered with a thoroughly-tested RFI shield design that protects against all fireground radio signals. The new FireHawk M7 Air Mask provides you with the best technology today and positions you for well into the future.

FireHAWK® M7 Air Mask

Self-Contained Breathing Apparatus

Industrial SCBA

AirHawk® MMR Air Mask

Based on the highly successful MSA FireHawk Air Mask which sees duty in the harshest environment —firefighting— MSA's Airhawk MMR Air Mask incorporates the latest technologies available for industrial, agricultural, HazMat and HVAC work.

What sets the Airhawk SCBA apart from the rest of the field is the long list of options that let you customize the apparatus for your specific needs.

- The Advantage 4000 Facepiece that can be configured to air-purifying, supplied-air and SCBA usage via MSA's unique adapter design.
- The Airhawk SCBA is available in low-pressure (2216 psig) or high-pressure (4500 psig) versions
- Three different 30-minute rated low-pressure cylinder types—aluminum, hoop-wound or carbon-fiber—let you choose low weight or low-cost
- High-pressure Carbon Fiber-wrapped Composite cylinders are available in 30-, 45- or 60-minute rated durations

- The innovative Firehawk PTC (Push-To-Connect) Regulator easily and securely attaches to your facepiece
- The industry leading Ultra Elite® Facepiece offers the choice of three sizes in either SoftFeel® Hycar rubber or silicone
- Dual-purpose options allow the connection of an air-line. Five different quick-disconnect fittings are available
- The harness assembly is available in Nylon or flame-and-heat-resistant (FHR)Kevlar material. A chest strap, lumbar pad and shoulder pads can also be added, making this the most comfortable industrial Air Mask on the market today

AirHawk® MMR Air Mask with Advantage 4000 Facepiece

Designed with the industrial user in mind, employing the latest in engineering advancements, the Airhawk MMR Air Mask will perform wherever firefighting compliance to NFPA 1981 is not required.

Tactical Air Masks

BlackHawk® Tactical Air Mask

The BlackHawk Tactical Air Mask is especially designed for tactical situations. Certain BlackHawk features eliminate reflections and/or audible sounds that would compromise concealment—in other words, it is black, sleek and silent.

Ultra Elite® Facepiece
- All-black Ultra Elite facepiece, available in Hycar or silicone rubber
- Three sizes of facepiece with two sizes of black nosecups
- HUD System mounting bracket
- SpeeD-ON® Kevlar Head Harness

Mask-Mounted Regulator
- Firehawk® Regulator with Push-to-Connect feature
- Neoprene intermediate pressure hose
- Variable flow bypass system

EOSTI / Gauge
- Nightfighter Heads-Up Display functions silently as the low pressure warning device and the cylinder pressure gauge*
- System consists of a transmitter mounted on the gauge line and a receiver that mounts on the facepiece
- A series of LEDs provides the user with cylinder volume information
- LEDs function in an intermittent mode and can be refreshed by depressing the refresh button on the transmitter

* There is no audible low-pressure warning device on this unit.

Harness and Carrier
- Composite backplate reinforced with glass fibers
- Large side handles on the backplate for pulling the wearer to safety
- Waistbelt, shoulder straps and pull strap are all made of flame and heat-resistant (FHR) Kevlar material
- Optional FHR shoulder pads and lumbar pad (solid or swiveling)
- Optional FHR chest strap
- Adjustable Kevlar cylinder retention strap with over-center latching system
- Cylinder shroud that encompasses the cylinder and Air Mask pneumatics. Shroud is made of Advance FHR material

Cylinders
- The Blackhawk Air Mask is available in both low-pressure (2216 psi) and high-pressure (4500 psi) operating systems
- Carbon- fiber cylinders available for use are: L-30 Stealth, H-30 Stealth, H-45 Low-Profile Stealth, H-60 Stealth

Quick-Fill® System Option
- A shoulder-mounted Quick-Fill System option is offered

Workline Accessory
- For extended-use applications, an air-line accessory is available with your choice of five different types of fittings

Rescue Belt
- Emergency egress system integral to the SCBA waist belt
- Includes Kevlar line and rappelling hardware

BlackHawk® Tactical Air Mask

Carrying Case
- A hard case or soft case are offered for storage purposes

CBRN Protection
- Optional CBRN hardened facepiece and regulator assembly
- Positive protection from CBRN agents
- Same CBRN components as the very popular FireHawk Air Mask

SCBA Key Components

Facepiece Assemblies for FireHawk M7 Air Masks

Ultra Elite® Facepiece

The MSA Ultra Elite Facepiece offers an effective combination of comfort and performance.

Designed to provide exceptional peripheral and downward vision, the Ultra Elite Facepiece features a super-soft facepiece texture for a smooth and comfortable fit. It also resists chemical attack and temperature extremes, and withstands rugged day-to-day use without tearing and ripping.

The design of the Ultra Elite Facepiece is based on extensive anthropometric studies of the face-length, temple-width and chin-width data from more than 8,000 individuals. The result is a facepiece that provides improved seals against a wide range of facial contours. To provide a secure, comfortable fit, the facepiece utilizes five adjustable straps with stainless steel, field-replaceable buckles that resist chemical attack. The straps also feature slightly larger adjustment tabs that are easier to manipulate, even with gloves on.

For slip-on convenience, the Ultra Elite Facepiece can be equipped with the SpeeD-ON® Facepiece Harness. Made of flame- and heat-resistant Kevlar Fabric, the harness features a hair-net type, five-point suspension that can be easily and securely adjusted at each point.

Lenses on MSA full facepieces are molded from polycarbonate, and a special super hardcoating provides a tough, durable facepiece lens to resist scratching.

Firehawk® MMR

The Firehawk MMR, MSA's mask-mounted regulator assembly, is available with two different attachment systems, the Firehawk MMR truly redefines ease-of-use and ease-of-maintenance, combined with outstanding performance.

The Firehawk second-stage regulator features a unique Slide-To-Connect (STC) attachment system that allows firefighters to hang the regulator on the facepiece in the "ready position," then simply push it into the facepiece when SCBA air is needed. Doffing of the regulator, while wearing gloves, is also easy with two large release buttons that automatically turn-off the flow of air as the regulator is doffed. A dual-swivel feature on the pressure hose provides maximum freedom-of-head movement and the silicone hose material ensures hose flexibility even at very cold temperatures.

In addition to the STC system, MSA also offers a second connection option for the Firehawk Regulator, the Push-to-Connect (PTC). The PTC's

Ultra Elite Facepiece

Adapter self-centers the Firehawk regulator and the loud dual sound of the regulator engaging onto the facepiece provides you with confidence that the Firehawk PTC is securely attached to your facepiece—an action that takes just seconds, when seconds count!

Maintenance is also a breeze, considering the Firehawk design requires no tools, adhesives, or sealants, and has approximately 70% fewer parts as compared to other regulators on the market. Additionally, there are no internal adjustments required. Any adjustments to the regulator may be accomplished at a single adjustment point through the outlet port of the regulator.

Ease of use and maintenance, combined with outstanding performance, makes the Firehawk MMR clearly the product of choice.

Heads-Up Display (HUD)

When you open your Air Mask's cylinder valve, the HUD automatically activates, displaying the cylinder pressure reading in 25% increments.

ClearCommand Communications System

MSA's ClearCommand Communications System is designed specifically to meet the modern communications needs of firefighters. It features an internally mounted microphone coupled with a large-diameter (50mm) amplifier speaker for optimal clarity and volume. Using a proprietary circuit design, the system delivers more than twice the volume of a facepiece alone. Mounted in an "out-of-the-way" position, the ClearCommand System doesn't block vision or mechanical communication. The Ultra Elite's mechanical voicemitter is still fully functional, even with the system installed.

Ultra Elite M7 Facepiece, SpeeD-ON Head Harness, Nosecup and M7 HUD Bracket					
Firehawk STC			**Firehawk PTC**		
	Standard speaking diaphragm	ClearCommand ready		Standard speaking diaphragm	ClearCommand ready
Small	10084689	10084821	**Small**	10084690	10084822
Medium	10084823	10084825	**Medium**	10084824	10084826
Large	10084827	10084829	**Large**	10084828	10084830

Heads-Up Display	
10083132	FireHawk M7 Receiver

Self-Contained Breathing Apparatus

Emergency Egress System

Rescue Belt

In a continuation of MSA's pursuit of firefighter safety, the Rescue Belt is being introduced to the fire service. This is an NFPA-compliant emergency egress system that is unique to MSA. The belt can be integrated into the carrier and harness assembly of the MSA Vulcan or Airframe Carrier and Harness assemblies. A 50 foot or 75 foot Kevlar line with a descender and caribiner is weaved into the belt to allow a trapped fire fighter to escape to either the ground or to a floor below the fire.

The belt is available in three lengths, standard (56 inches), mid-size (66 inches) and long (76 inches).

Rescue Belt	
10052766	50' Standard Rescue Belt
10071003	50' Mid-Size Rescue Belt
10052767	50' Long Rescue Belt
10052768	75' Standard Rescue Belt
10071004	75' Mid-Size Rescue Belt
10052769	75' Long Rescue Belt

Carrier & Harness Assembly

FireHawk M7 Carrier and Harness Assembly

The one component of any SCBA that has the most impact on firefighter comfort is the carrier and harness assembly. MSA is introducing a new carrier and harness assembly that places an emphasis on firefighter comfort while maintaining the robustness and reliability that is expected in the fire service. The carrier and harness comes standard with large side handles and a central attachment point for pulling firefighters to safety in rescue scenarios. The swiveling lumbar pad provides maximum freedom of movement and comfort when crawling or climbing.

The assembly utilizes the proven pieces from previous generations of Air Masks such as the tunneled shoulder straps for hose containment, and tri-bar slides for easy removal/installation of the waist belt and shoulder straps.

All units are equipped with double-pull waist belts and an optional chest strap is available.

FireHawk M7 Carrier and Harness Assemblies				
Part No.	Pressure		Chest Strap	Swiveling Lumbar Pad
	Low	High		
10083128	X			
10083129		X		
10086663	X		Yes	Yes
10086662		X	Yes	Yes
10086664	X		Yes	
10086665		X	Yes	
Accessories				
10083134	Replacement FireHawk M7 Lumbar Pad			
10012167	Chest Strap			

Cylinders

Carbon-Wrapped Cylinders

Carbon-wrapped Cylinders are the lightest SCBA air cylinders ever developed by MSA. They feature a unique outerwrap made of lightweight, high-performance carbon fibers, which reduces cylinder weight by two to six pounds when compared to fiberglass-wrapped cylinders and as much as ten pounds when compared to aluminum cylinders. They are available in five models to accommodate a wide range of applications.

Cylinders for SCBA				
Part No.	Cylinder Type (Cylinder & Valve)	NIOSH Service Rating Life	Pressure	Weight* (empty)
807586	L-30	30'	2216 psig	7 lb – 9 oz.
816115	L-30+	30'	3000 psig	9 lb – 14 oz.
469619	Fiberglass Hoop-Wound	30'	2216 psig	13 lb.
809872	Aluminum	30'	2216 psig	18 lb.
807587	H-30	30'	4500 psig	7 lb – 3 oz.
807570	H-45	45'	4500 psig	10 lb – 9 oz.
10035644	H-45 LP	45'	4500 psig	10 lb – 6 oz.
807588	H-60	60'	4500 psig	12 lb – 11 oz.

All weights shown are approximate figures.

For more information see Bulletin 0108-11-MC. See Bulletin 0108-13-MC for information on Custom-Logoed cylinders for your MSA Air Mask.

MSA Accountability System

Accountability is key to every firefighter's safety on a fire scene. MSA's new optional Accountability System revolutionizes fireground safety by combining the latest computer software with a high-performance radio module and the field-proven technology of MSA's ICM Tx Integrated PASS.

New!

A new way to monitor vital information
- Each MSA base station can monitor up to 50 firefighters, and you can use multiple base stations on a single computer.
- The FireHawk M7 Air Mask with telemetry transmits to incident command the firefighter's name, team assignment, cylinder pressure, service-time remaining, PASS alarms (motion or manual), thermal alarms, battery status, radio connectivity, and evacuation acknowledgement.

A fireground management system
- Personalized ID tags for each firefighter tell incident command exactly who is on scene.
- An integrated PAR (personnel accountability report) timer helps manage radio calls to each team.
- Incident command can manually add firefighters who are not wearing an SCBA or mutual aid firefighters, so all personnel can be accounted for.

Intuitive and easy to use
- Assign firefighters to teams by clicking on a firefighter's icon and dragging it to another team.
- A volume of critical information is available at a glance of the screen, due to the large number of firefighters that can be displayed and the pictorial format of the information.
- Receive both audible and visual indications of critical events such as PASS alarms or low-pressure alarms.

A two-way evacuation feature
- Incident command is assured that firefighters receive all evacuation messages. When incident command transmits the alarm through the FireHawk M7 Air Mask, they'll know the firefighter received it, because the unit automatically sends a confirmation message to the base station.
- By simply pressing a button on his/her own control module, a firefighter can send a manual confirmation to acknowledge that they have received and understand the critically important evacuation message.
- Firefighters will hear the evacuation alarm on their own personal PASS device. Also, visual indications in the HUD and an icon on the control module will alert the firefighter that it is time to evacuate.
- An individual firefighter, a team of firefighters, or all firefighters can be evacuated with the click of a button.

- Although certain concrete and steel commercial structures can challenge any radio signal, MSA's Accountability System coverage with radio technology provides highly reliable performance for a 1-mile line-of-sight range.
- Due to the spread-spectrum design, it does not interfere with other high-band radio frequency equipment.
- For additional safety, both base station and firefighter modules have an icon message to inform users if a firefighter falls out of radio signal range, so that alternate accountability measures, such as voice radio contact with teammates, can be taken.

Accountability System

MSA's new M7 Accountability System revolutionizes fireground safety by combining the latest computer software with a high-performance radio module and the field-proven technology of MSA's ICM TxR Integrated PASS.

10072240	Accountability Base Station Kit (includes software, antenna kit, USB cable and 8-24 volt power cable)
10083876	M7 Control Module Reader / M7 ID tag writer
10083875	M7 ID tags
10075756	Antenna kit
10063880	USB cable
10049410	8-24 volt, power cable
10047342	Wall mount power cable (not included in 10072240 kit)

Self-Contained Breathing Apparatus

Emergency Breathing Systems

The Quick-Fill® System

The patented Quick-Fill System lets MSA Air Mask users refill and transfill air cylinders while the SCBA is worn, without removing the air cylinder—even in IDLH atmospheres. Use this MSA-exclusive option to:

- Fill an SCBA cylinder from a mobile compressor or cascade system in less than a minute.
- Transfill between two cylinders, providing an Emergency Breathing System.
- Extend the air supply over longer durations, using a remote compressed-air source.

Because performance is not affected, MSA Air Masks retain NIOSH certification during use of the Quick-Fill System.

Air Masks compliant to recent NFPA standard have the Quick-Fill URC fitting located at the Audi-Larm warning device. A Quick-Fill hose with a quick-disconnect connects the air source to the adapter for air transfer. See Bulletin 0105-92-MC for a Question & Answer overview of Quick-Fill Systems.

The Quick-Fill System	
Replacement Parts for the Quick-Fill System	
485366	EBS hose package, includes 3-foot emergency transfill hose in Kevlar pouch
485331	Emergency transfill hose, less Kevlar pouch
485390	Kevlar pouch
485391	Male stainless steel quick-disconnect with SAE-10 thread, complete with dust cover (also for use as a fitting for customized refilling systems)
485392	Female quick-disconnect with SAE-4 thread, complete with dust cover
Quick-Fill Hoses	

25-ft lengths are stocked; other "custom lengths" are available on a special material basis. All SAE Fittings are for high-pressure service. Female quick-disconnect fittings have dust covers.

25 ft	12 ft	10 ft	8 ft	6 ft	3 ft	
485332	802690	802689	802688	802687	485331	**FQD x FQD**
487907	802677	802675	802673	802671	492796	**FQD x CGA-347 Outlet**
487909	802685	802683	802681	802679	487427	**FQD x CGA-347 CN**
487906	802704	802703	802702	802701	802705	**FQD x SAE-4**
487908	802678	802676	802674	802672	492797	**FQD x CGA-346 Outlet**
487910	802686	802684	802682	802680	487428	**FQD x CGA-346 CN**

RescueAire™ II Portable Air-Supply System

The RescueAire II Portable Air Supply System is designed to meet the needs of Rapid Intervention Teams (RITs). The system consists of a lightweight Carbon-Wrapped cylinder, Quick-Fill® emergency breathing system, ExtendAire™ emergency breathing system, and an MMR regulator, supported by a flame- and heat-resistant harness. The RescueAire is a complete system that can provide emergency breathing air for most any victim.

The RescueAire II System is available in both low-pressure (2216 psig) and high-pressure (4500 psig) versions. An optional-use shoulder strap is also provided for hands-free carrying.

RescueAire™ II Portable Air-Supply System		
with L-30 cylinder	**less cylinder**	**Low-Pressure (2216 psig)**
10025491	10033312	RescueAire II with L-30 Cylinder
10041196	10041198	RescueAire II, Firehawk STC MMR
10041230	10041232	RescueAire II, Firehawk PTC MMR
with H-60 cylinder	**less cylinder**	**High-Pressure (4500 psig)**
10025462	10025492	RescueAire II with H-60 Cylinder
10041195	10041197	RescueAire II, Firehawk STC MMR
10041199	10041231	RescueAire II, Firehawk PTC MMR

The ExtendAire™ System

The ExtendAire System can be used as both an emergency breathing system and a dual-purpose device for MMR SCBA to allow firefighters to quickly and easily connect to an air-line.

The ExtendAire™ System	
812958	ExtendAire Air-line Hose with foster plug
812973	40" Rescue Hose
10031798	ExtendAire Upgrade Kit for Threaded Firehawk MMR
10031797	ExtendAire Upgrade Kit for Quick-Connect Firehawk MMR

How to Order SCBA: Get the Exact Model You Need

The Assemble-To-Order System

MSA's Assemble-To-Order System (ATO) will make ordering the right mask easier and faster than ever. Instead of choosing from a handful of complete Air Mask assemblies, users can order a custom-made Air Mask with every option exactly as desired. Contact MSA Customer Service Center for details.

FireHAWK M7 Air Mask

Air Mask Pressure	Carrier/Harness Assembly	Lumbar Pad/Rescue Belt	Cylinder	MMR Type	Emergency Breathing Support	Facepiece	Nosecup	Head Harness	Electronic Communications	Integrated Pass/Telemetry	Case
L 2216	A Single Pull without chest strap	0 None	0 None	A CBRN Firehawk STC, threaded,	0 None	A None	0 None	0 None	A None	A PASS with thermal alarm activated	0 None
	B Single Pull with chest strap	1 Swiveling Lumbar Pad	1 3AL Aluminum with air	B CBRN Firehawk STC, QC,	1 Quick-Fill	B Hycar Small	1 Medium	2 SpeeD-ON less neck strap	B Clear Command Ready with bracket	B PASS without thermal alarm activated	1 Hard Case
	C Double Pull without chest strap	A Rescue Belt - Standard, 50'	2 Hoop Wrapped with air	C CBRN Firehawk PTC, threaded,	2 ExtendAire	C Hycar Medium	2 Large	4 SpeeD-ON with neck strap	C Clear Command Amp	C PASS, telemetry and thermal alarm	2 Soft Case
	D Double Pull with chest strap	B Rescue Belt - Mid-Size, 50'	3 30' Carbon with air	D CBRN Firehawk PTC, QC,	3 Quick-Fill and ExtendAire	D Hycar Large			D Clear Command Amp/RI	D PASS, telemetry and without thermal alarm	
	Options A & B can only be chosen if a rescue belt is selected.	C Rescue Belt - Long, 50'	4 3AL Aluminum less air		M is not compatible with Quick-Fill						
M 3000		D Rescue Belt - Standard, 75'	5 Hoop Wrapped less air								
		E Rescue Belt - Mid-Size, 75'	6 30' Carbon less air								
		F Rescue Belt - Long, 75'	0 None								
H 4500			1 30+ Carbon with air								
		If choosing a rescue belt, the carrier/harness assembly must be a single pull (options A or B).	2 30+ Carbon less air								
			0 None								
			1 30' Carbon with air								
			2 45' Carbon with air								
			3 45' Carbon low-profile with air								
			4 60' Carbon with air								
			5 30' Carbon less air								
			6 45' Carbon less air								
			7 45' Carbon low-profile less air								
			8 60' Carbon less air								

A-M7 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Self-Contained Breathing Apparatus

BlackHawk® MMR Self-Contained Breathing Apparatus Assemble-To-Order (ATO) Matrix

SCBA Type	Carrier/Harness Assembly	Lumbar Pad/Rescue Belt†	Cylinder	MMR Regulator Type	Air-Line Options	Emergency Breathing System	Facepiece	Nosecup	Head Harness	Communications	HUD Options	Case
BL 2216 BlackHawk Air Mask	A Kevlar	0 None	0 None	G Firehawk PTC, Solid Cover	0 None	0 None	A None	0 None	0 None	A Standard Speaking Diaphragm	1 Night-Fighter HUD	0 None
	B Kevlar with Chest Strap	1 Lumbar Pad	1 30' Carbon	R Firehawk PTC, Solid Cover, CBRN	1 Snap-Tite Aluminum	1 Quick-Fill Shoulder Mounted	B Ultra Elite Hycar, Small	1 Med	1 Rubber	B Clear-Command Ready		1 Hard Case
	C Kevlar with Shoulder Pads	2 Swiveling Lumbar Pad	2 30' Carbon less Air		2 Hansen SST		C Ultra Elite Hycar, Medium	2 Large	2 SpeeD-On			2 Soft Case
BH 4500 BlackHawk Air Mask	D Kevlar with Shoulder Pads and Chest Strap	A Rescue Belt - Standard 50'	0 None		3 Hansen Brass		D Ultra Elite Hycar, Large			C Clear-Command Amp		
		B Rescue Belt - Standard 75'	1 30' Carbon		4 Foster Steel		E Ultra Elite Silicone, Small			D Clear-Command Amp/RI (Less PTT)		
		C Rescue Belt - Long 50'	2 45' Carbon Low-Profile		5 Snap-Tite Locking Aluminum		F Ultra Elite Silicone, Medium					
		D Rescue Belt - Long 75'	3 60' Carbon				G Ultra Elite Silicone, Large					
		E Swiveling Rescue Belt - Standard 50'	4 30' Carbon less Air		Option R can only be chosen if a Hycar facepiece is selected							
		F Swiveling Rescue Belt - Standard 75'	5 45' Carbon Low-Profile less Air									
		G Swiveling Rescue Belt - Long 50'	6 60' Carbon less Air									
		H Swiveling Rescue Belt - Long 75'										

C — [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Part Number

†Note: Standard Rescue Belt fits waist sizes up to 54 inches. Long Rescue Belt fits waist sizes up to 74 inches.

AirHawk® MMR Self-Contained Breathing Apparatus Assemble-To-Order (ATO) Matrix

SCBA Type	Carrier/Harness	Pad Options	Cylinder	MMR Regulator Type	Air-Line Option	Facepiece	Nosecup	Head Harness	PASS	Case
AL AirHawk-MMR (2216 psig)	A Nylon without chest strap	0 None	0 None	G Firehawk PTC with Swivel & Solid Cover	0 None	A None	0 None	0 None	0 Gauge	0 None
		1 Shoulder Pad	1 3AL Aluminum		1 Snap-Tite Aluminum	B Ultra Elite, Hycar, Small	1 Med	1 Rubber		1 Hard Case
	B Nylon with chest strap	2 Lumbar Pad	2 Hoop-Wound		2 Hansen SST	C Ultra Elite, Hycar, Medium	2 Large	2 SpeeD-ON		2 Soft Case
		3 Shoulder Pad & Lumbar Pad	3 30' Stealth		3 Hansen Brass	D Ultra Elite, Hycar, Large		3 Silicone		
	C Kevlar without chest strap	4 Swiveling Lumbar Pad			4 Foster Steel	E Ultra Elite, Silicone, Small		4 Net		
		5 Swiveling Lumbar Pad & Shoulder Pad	0 None		5 Snap-Tite Locking Aluminum	F Ultra Elite, Silicone, Medium				
	D Kevlar with chest strap		1 30' Stealth		6 Foster SST	G Ultra Elite, Silicone, Large				
AH AirHawk-MMR (4500 psig)			2 45' Stealth Low Profile			H Advantage 4000, Hycar Small				
			3 60' Stealth			I Advantage 4000, Silicone Small				
						J Advantage 4000, Hycar Medium				
						K Advantage 4000, Silicone Medium				
						L Advantage 4000, Hycar Large				
						M Advantage 4000, Silicone Large				

B — [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Part Number

ClearCommand® HCS Helmet Communication System

The Helmet Communication System from MSA is a state-of-the-art radio interface device which significantly improves the user's ability to receive and send messages even in loud ambient-noise environments. It goes wherever you go. The system consists of a helmet-mounted microphone and ear speaker assembly that weighs 5.3 ounces and easily snaps onto the user's fire helmet or industrial-style helmet's ratchet suspension. The helmet mic/ear speaker assembly connects to a lapel microphone or optional stand-alone PTT (push-to-talk) unit. The lapel microphone and PTT are permanently fitted with a connector for attachment to the specific radio of choice. The Helmet Communication System also offers a plug-in truck communication adapter that can be used by firefighters, along with their helmet microphone assembly, on the way to a fire scene or other incident. Once the firefighter arrives at the scene, the truck system cable is unplugged from the helmet microphone, and the helmet microphone cable end is connected to the user's lapel mic or PTT.

The user of the Helmet Communication System has uninterrupted communication from the time the alarm sounds until the incident is over.

For more complete information, see Bulletin 3639-01-MC.

Helmet Mic with Stand-Alone PTT

Helmet Mic with Lapel Mic

Features & Benefits

- Incorporates a "noise-eliminating" bone-conduction voice transmitter that virtually eliminates high ambient noise levels.
- Custom user-fitted ear speaker brings all incoming communication directly to the user's ear. No need to lift your lapel mic up to your ear to hear transmission.
- Easily snaps onto the ratchet suspension of fire helmets or industrial-style helmets. The unit can be easily transferred to other users, and no tools are required for removal.
- Can be used over the top of facepiece head harnesses, hoods and liners without losing the quality of the transmission.
- The bone-conduction microphone is made of soft silicone material, which makes it comfortable to wear, with no pressure points.
- The helmet microphone assembly can be reversed on the helmet suspension to position the ear speaker on either ear.

- The helmet mic system, when used with the lapel mic or PTT, is powered by the battery from the radio. No need to replace or re-charge dry cells.
- Special connectors suitable for most common radios are available for the lapel microphone and PTT, which allows users to adapt the system to their existing radios.
- The helmet mic is NFPA-certified which allows its use while fighting fires.
- Intrinsic safety approvals allow the use of the Helmet Communication System in hazardous environments.
- The stand-alone PTT unit is designed for use under hazardous material suits. The large button makes it easy for the user to depress and communicate.
- The helmet mic incorporates a cable keeper which allows for storage of the cable when it's not connected to the lapel mic or PTT.

Helmet Microphone Assembly	
10042902	Helmet Microphone Assembly (includes Custom Fitted Flannel Headband Liner)
Lapel Mic Kits for Radio Interface*	
10042908	Maxon SP120, SP130, SP140
10042909	Motorola HT600, MT1000, MTX820, MTX900, Radius P200 & P500
10042903	Motorola HT1000, JEDI, MT2000, MTS2000, MTX838, MT839, MTX8000, MTX9000
10042904	Motorola Astro and Saber
10042905	Motorola Radius GP300, P110, SP50, LTS2000, Spirit-III, GTX, SP21
10042912	Motorola STX, MX800, MX840
10042906	GE Ericsson PCS, PC2005
10042907	GE Ericsson MRK, LPE-200, Prism, PX 126T
Stand-Alone PTT Kits for Radio Interface*	
10045667	Maxon SP120, SP130, SP140
10045668	Motorola HT600, MT1000, MTX820, MTX900, Radius P200 & P500
10045662	Motorola HT1000, JEDI, MT2000, MTS2000, MTX838, MT839, MTX8000, MTX9000
10045663	Motorola Astro and Saber
10045664	Motorola Radius GP300, P110, SP50, LTS2000,Spirit-III, GTX, SP21
10045669	Motorola STX, MX800, MX840
10045665	GE Ericsson PCS, PC2005
10045666	GE Ericsson MRK, LPE-200, Prism, PX 126T
Truck System	
10045732	Nexus Adapter, D. Clarke
10045731	Phonejack Adapter, D. Clarke
Parts and Accessories	
10046087	Dust Cover
10046123	Guard Ring, Tall
10046122	Guard Ring, Short
10046089	Belt Clip Assy, Standard
10046120	Belt Clip Assy, Clothes Pin Type
10046121	O-Ring, Single Pin Connector
10045778	Flannel Head Band Liner

*If your specific radio is not listed, please contact MSA Customer Service.

Self-Contained Breathing Apparatus

ClearCommand® Communications System for Ultra Elite® Facepieces

MSA's ClearCommand Communications System is designed specifically to meet the modern communications needs of firefighters. Because it's available in two versions, amplifier and amplifier with radio interface, firefighting teams can be properly fitted for the job at hand. Also, the systems are designed for "shared-use" of the amplifier with a unique "bus-bar" arrangement, so individual issue is not required.

The ClearCommand systems feature an internally mounted microphone coupled with a large-diameter (50mm) amplifier speaker for optimal clarity and volume. Using a proprietary circuit design, the system delivers more than twice the volume of a facepiece alone. Mounted in an "out-of-the-way" position, the ClearCommand System doesn't block vision or mechanical communication. The Ultra Elite's mechanical voicemitter is still fully functional, even with the system installed.

The radio interface version features the same amplifier as the amp-only version, combined with an ear-speaker for incoming radio messages and a lapel mic assembly for interface with over 100 radios. The lapel mic can be used as a component of the ClearCommand system or as a stand-alone hand mic.

Both the amplifier and radio interface models are intrinsically safe, and meet the applicable requirements of NIOSH and NFPA 1981, 2002 edition.

Field Maintenance and Repair

The World Class Air Mask Maintenance Training Program

MSA offers a complete program for maintenance and repair of MSA Air Masks.

The program is supported with personalized training tailored to customers' needs and taught in the field by MSA-authorized personnel.

User maintenance covers procedures necessary to conduct general cleaning, inspection, and limited maintenance in accordance with the Occupational Safety and Health Administration (OSHA), National Fire Protection Association (NFPA), and the American National Standards Institute (ANSI) standards.

C.A.R.E. Certified Air Mask Repair Education covers all maintenance for both low- and high-pressure SCBA. Air Mask inspection and maintenance can be performed by MSA or a factory-authorized service center. Or, individuals can obtain training for C.A.R.E certification from MSA. By having a C.A.R.E-certified technician on staff, fire departments and other facilities with a large number of Air Masks can perform all inspection and maintenance in-house.

- **All repairs and maintenance can be done in the field.**
- **A selection of overhaul kits, spare parts, and tool kits is available.**
- **Users may conduct periodic performance testing using an authorized MSA regulator tester.**

Certified AirMask Repair MSA Education

ClearCommand System Kits	
10024074	Amplifier Kit, complete with microphone
10051290	Amplifier Radio Interface Kit, w/ microphone, less PTT
10023055	Microphone Kit, with mounting bracket
*Lapel Mic Kits for Radio Interface**	
10042908	Maxon SP120, SP130, SP140
10042909	Motorola HT600, MT1000, MTX820, MTX900, Radius P200 & P500
10042903	Motorola HT1000, JEDI, MT2000, MTS2000, MTX838, MT839, MTX8000, MTX9000
10042904	Motorola Astro and Saber
10042905	Motorola Radius GP300, P110, SP50, LTS2000, Spirit-III, GTX, SP21
10042912	Motorola STX, MX800, MX840
10042906	GE Ericsson PCS, PC2005
10042907	GE Ericsson MRK, LPE-200, Prism, PX 126T
*Stand-Alone PTT Kits for Radio Interface**	
10045667	Maxon SP120, SP130, SP140
10045668	Motorola HT600, MT1000, MTX820, MTX900, Radius P200 & P500
10045662	Motorola HT1000, JEDI, MT2000, MTS2000, MTX838, MT839, MTX8000, MTX9000
10045663	Motorola Astro and Saber
10045664	Motorola Radius GP300, P110, SP50, LTS2000, Spirit-III, GTX, SP21
10045669	Motorola STX, MX800, MX840
10045665	GE Ericsson PCS, PC2005
10045666	GE Ericsson MRK, LPE-200, Prism, PX 126T
Truck System	
10045732	Nexus Adapter, D. Clarke
10045731	Phonejack Adapter, D. Clarke
Parts and Accessories	
10046087	Dust Cover
10046123	Guard Ring, Tall
10046122	Guard Ring, Short
10046089	Belt Clip Assy, Standard
10046120	Belt Clip Assy, Clothes Pin Type
10046121	O-Ring, Single Pin Connector
10045778	Flannel Head Band Liner

*If your specific radio is not listed, please contact MSA Customer Service.

SCBA Accessories

APR Adapter

MSA's APR adapter provides firefighters with the versatility they need to perform all tasks at the fire ground with one common facepiece. From fire-fighting to overhaul to homeland security, firefighters can switch from a positive-pressure facepiece to a negative-pressure air-purifying respirator simply by engaging the APR Adapter. The APR Adapter uses MSA's comprehensive family line of air-purifying cartridges; select from the Advantage cartridges or our CBA/RCA canisters to protect against a multitude of airborne contaminants.

The APR Adapter is designed for use in non-IDLH environments and is NIOSH-approved. Contact MSA for more information.

Spectacle Kit for Full-Facepiece Respirators

For use by workers who must wear corrective lenses, the Spectacle Kit can be easily inserted into the facepiece. The kit includes a wire support, rubber guide, and pair of metal-frame spectacles. There are two kits for the Ultra Elite facepiece; one uses a side wire support to hold the lenses in the facepiece, while the other uses a center support to position the unit. Desired adjustment is obtained by moving the spectacles in and out of the rubber guide and up and down the wire support. One size of spectacle frame is used (S-7 shape, 48-mm lens size) with Universal Bridge Corrective Lenses that can be obtained from local sources. The Spectacle Kit can be used with a nosecup.

Side-Support Spectacle Kit for Ultra Elite® Facepiece

Center-Support Spectacle Kit for Ultra Elite® Facepiece

Nosecups

Molded from a soft rubber compound that is resistant to facial oils, the optional nosecup helps reduce the possibility of lens fogging. The nosecup is particularly effective under conditions of high humidity and/or low temperatures by inhibiting contact of moist exhaled air with the facepiece lens. A nosecup can be easily affixed to the facepiece without tools. Any size nosecup may be installed in any size Ultra Elite Facepiece for a customized, more comfortable fit.

High-Pressure Filling Hose

Provides a convenient means to connect and charge high-pressure air into a high-pressure 4500 psig cylinder.

Accessories for Filling Low-Pressure (2216 psig) Cylinders
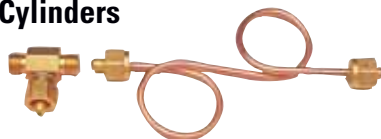
APR Adatpers	
Firehawk MMR STC Version	
10032511	APR Adapter
10032927	APR Adapter Individual Kit
10032925	APR Adapter Truck Kit
Firehawk MMR PTC Version	
10040052	APR Adapter
10040055	APR Adapter Individual Kit
10040054	APR Adapter Truck Kit
Accessories	
10037809	Ultra Elite, Anti-Fog Applique (10/pkg)
10037810	Ultravue, Anti-Fog Applique (10/pkg)
817590	CBA/RCA Canisters (box of 6)
809858	Replacement Baffle
813341	Replacement Bayonet Cover
Spectacle Kits	
804638	Ultra Elite Spectacle Kit (side wire support)
493581	Ultra Elite Spectacle Kit (center support)
Nosecups	
495188	Medium Black Nosecup
495189	Large Black Nosecup
High-Pressure Filling Hose	
476105	High-Pressure Filling Hose Assembly
Accessories for Filling Low-Pressure (2216 psig) Cylinders	
68846	Air Outlet Connection, complete w/ Gauge
68850	Air Coupler Tee
68851	Air Pigtail
476156	Low-Pressure Air-Filling Hose, 5 feet long

Shop Online for MSA Gear

MSA FireSlayer and Be Ready promotional items are available to anyone via MSA's Internet site. Sporting appropriate logos are shirts, duffels, caps, golf items, mugs, money clips, lighters and more. The Fireslayer logo helps promote our products to the fire-fighting market, while the Be Ready logo is aimed at Homeland Security. Look for the "MSA Gear" link in the Resources & Info area after selecting MSA North America; MSA United States from the MSA homepage at MSAnet.com.

After making your selections, complete the shipping information and furnish a credit card number. Your order will be processed, and you should receive it within a week. Express service is also available.

Fire Service Helmets

Cairns® Fire Helmets: Quality Craftsmanship Since 1836

Since 1836, Cairns has been the original manufacturer of leather firefighting helmets. Today, Cairns leather helmets retain the same authentic look and quality that generation after generation of firefighters have relied upon. And now, these helmets are also made with the added protection necessary for today's standards of safety in the firefighting industry.

Cairns also applies the same tradition of excellence to its newer lines of firefighting helmets. Both traditional and modern designs feature the very best in contemporary high-tech materials, such as

lightweight but durable fiberglass/Kevlar composites. The versatile Structural Helmet is made of tough high-temperature thermoplastic.

All helmets are available with many options, depending on the specific helmet model, such as a choice of colors, brim size, chinstraps, liner material, etc. Also, a variety of accessories is available to complement Cairns fire helmets. Faceshields, goggles, ear/neck protection, and fronts can all be selected to configure the exact helmet you need.

Leather Helmets

The original leather helmet, individually hand-crafted to meet today's OSHA and NFPA standards with over 165 years of dependable performance.

Leather Helmet Features & Benefits

- Hand-crafted, 100% leather shell.
- Insurance against fireground damage with Cairns' 5-year shell replacement warranty.
- Non-corroding, high-temperature, glass-filled polymer faceshield/goggle hardware.
- Faceshield wing protectors for extra faceshield reinforcement.
- Nomex chinstrap with one-hand quick release buckle and postman slide allows quick and easy adjustment.
- Choice of Nomex or PBI/Kevlar earlap for increased neck/ear coverage and protection.
- High-temperature foam cap increases thermal and impact protection.

- High-temperature impact cap liner resists distortion at high temperatures.
- Comfortable fit for all head sizes between 6-3/8 inches and 8-3/8 inches.
- Large diameter helmethanger fits on largerhooks and racks.

N5A New Yorker (OSHA approved)

N6A Houston (NFPA approved)

> **For ordering information, replacement parts and accessories, see the 2007 Fire Helmets Catalog (Bulletin 3600-01-MC) or contact your MSA Fire Service Distributor.**

Traditional Helmets

Traditional style combined with high-tech performance.

Traditional Helmet Features & Benefits

- Market-leading 5-year shell replacement warranty.
- Non-corroding, high-temperature-resistant, faceshield/goggle hardware.
- Rugged, high-temperature edge will not melt or drip.
- Easy front headband adjustment for proper SCBA mask fit.
- Simple rear ratchet height adjustment to fit all head sizes.
- Headband fits a wide variety of head sizes.
- Durable helmet hanger fits on large hooks and resists bending.
- Minimal parts for lower service cost and easier maintenance.
- Exclusive shell release system for an extra margin of safety (except 880).
- Unique tube-lock system absorbs the shock of an impact.

Cairns® 10144

Classic™ 1000

880 Tradition

Cairns® 1010

> **For ordering information, replacement parts and accessories, see the 2007 Fire Helmets Catalog (Bulletin 3600-01-MC) or contact your MSA Fire Service Distributor.**

Defender® Visor for Cairns 1010 and 1044 Helmets

New!

The new Defender® Visor for MSA Cairns 1010 and 1044 Traditional Helmets offers eye protection from dust, dirt, and grit. Sleek and attractive construction allows fast, easy raising and lowering of your visor even with gloved hands. This visor's exclusive integral design is retractable for the ultimate in compact convenience. Standard clear and amber Tuffshield visor options are NFPA-compliant.

New Cairns 1010 and 1044 helmet assemblies incorporating the Defender Visor may be ordered through the Traditional Helmets Assemble-To-Order Matrix. A user-installable upgrade kit (includes new impact cap)

lets you install the Defender Visor in existing Cairns 1010 or 1044 Helmets yourself.

If you're in the market for a new Cairns 1010 or 1044 Helmet or if you've thought about replacing your existing impact cap, consider the streamlined advantage of the new NFPA- compliant MSA Defender Visor. Cairns 1010 and 1044 Traditional Helmets offer the perfect combination of durability and performance in a lightweight, high-performance design. Cairns HELMETS once again has incorporated the latest technological advances that firefighters come to expect from the leader.

Standard 1010 Defender Configurations	
1010DS	Includes Standard Flannel Cushion Liner, Yellow Nomex Earlap, Silk-Screened 6" Eagle Front Holder and Clear Defender Visor
1010DD	Includes Leather Cushion Liner, Flannel Crown Pad, PBI/Kevlar Earlap, Carved 6" Eagle Front Holder and Clear Defender Visor
1010TS	Includes Standard Flannel Cushion Liner, Yellow Nomex Earlap, Silk-Screened 6" Eagle Front Holder and Tuffshield Defender Visor
1010TD	Includes Leather Cushion Liner, Flannel Crown Pad, PBI/Kevlar Earlap, Carved 6" Eagle Front Holder and Tuffshield Defender Visor

Standard 1044 Defender Configurations	
1044DS	Includes Standard Flannel Cushion Liner, Yellow Nomex Earlap, Silk-Screened 6" Eagle Front Holder and Clear Defender Visor
1044DD	Includes Leather Cushion Liner, Flannel Crown Pad, PBI/Kevlar Earlap, Carved 6" Eagle Front Holder and Clear Defender Visor
1044TS	Includes Standard Flannel Cushion Liner, Yellow Nomex Earlap, Silk-Screened 6" Eagle Front Holder and Tuffshield Defender Visor
1044TD	Includes Leather Cushion Liner, Flannel Crown Pad, PBI/Kevlar Earlap, Carved 6" Eagle Front Holder and Tuffshield Defender Visor

Features and Benefits

- Available on both the Cairns 1010 and Cairns 1044 Fire Helmets
- Retractable eyewear system that's ready when you need it
- Available with a new helmet or as user-upgrade kit
- Quick-disconnect for fast lens change-out without the use of tools
- Never lose or misplace your goggles again
- Optically correct lens eliminates peripheral distortion

Modern Helmets

Different models for appplications such as structural firefighting, EMS/rescue and wildland firefighting.

Modern Helmet Features & Benefits

- Market-leading 5-year shell replacement warranty.
- Non-corroding, high-temperature-resistant, faceshield/goggle hardware.
- Rugged, high-temperature edge will not melt or drip.
- Easy front headband adjustment for proper SCBA mask fit.
- Simple rear ratchet height adjustment to fit all head sizes.
- Headband (6 3/8 to 8 3/8) fits a wide variety of head sizes.
- Durable helmet hanger fits on large hooks and resists bending.
- Minimal parts for lower service cost and easier maintenance.
- Exclusive shell release system for an extra margin of safety (except 360S and HP3).
- Unique tube-lock system absorbs the shock of an impact (except 360S).

660C Metro®

Structural 360S®

Invader™ 664

Phoenix 660®

Intruder 990®

For ordering information, replacement parts and accessories, see the 2007 Fire Helmets Catalog (Bulletin 3600-01-MC) or contact your MSA Fire Service Distributor.

Fire Service Helmets

Cairns Rescue Helmets

Rescue Helmets Features & Benefits

- Market-leading 5-year shell replacement warranty.
- Non-corroding, high-temperature-resistant, faceshield/goggle hardware.
- Rugged, high-temperature edge will not melt or drip.
- Easy front headband adjustment for proper SCBA mask fit.
- Simple rear ratchet height adjustment to fit all head sizes.
- Headband (6 3/8 to 8 3/8) fits a wide variety of head sizes.
- Durable helmet hanger fits on large hooks and resists bending.
- Minimal parts for lower service cost and easier maintenance.

New!

Commando® HP3

Rescue 360R

New!

Rescue 360R-13

For ordering information, replacement parts and accessories, see the 2007 Fire Helmets Catalog (Bulletin 3600-01-MC) or contact your MSA Fire Service Distributor.

Standard Fronts

Made with your choice of high-gloss patent leather or dull-finish genuine leather reinforced with a high-temperature, shrink-resistant back layer and sewn with high-temperature, fire-retardant Nomex thread.

The Choice Is Yours!

Standard fronts offer over 27 million possible configurations! Design your own standard front by choosing from the options and then indicating your preferences by calling 1-877-MSA-FIRE to place your order.

Crash Fire Rescue (CFR) Proximity System

- Easy to don and doff, this CFR System is compliant with NFPA 1976–2000.
- Designed and approved for use with the Metro 660C, Invader 664, Cairns 1010 and Cairns 1044 Fire Helmets, it will not interfere with the SCBA while in use.
- Components consist of an aluminized PBI/Kevlar layer, vapor barrier and inner layer.

Evolution® Thermal Imaging Cameras (TICs)

Comparison of Fire Service TIC Performance*

High and Low Sensitivity

Most TICs generate thermal images in either High Sense or Low Sense modes, depending on the temperature of the scene. High Sense mode delivers the best image quality – but has a limited temperature range. Low Sense mode trades image quality for a wider temp range to keep the TIC working in high heat.

Evolution 5200 Performance
• Widest High Sense Temp Range
• Highest Low Sensitivity
• Heat Seeker PLUS color detail

Evolution 5200HD² TIC Performance
• Widest High Sense Temp Range at 320°F
• Heat Seeker PLUS in High and Low Sense
• Highest Low Sensitivity
• Total ISDR of 4701

Competitive TIC Performance
• Limited Temp Range in High Sense
• Temp Range is below 300ºF
• Some models have limited High Sense
• No Heat Seeking Color in High Sense
• Limited Sensitivity in Low Sense

Evolution 5200 TIC Performance

Only MSA delivers High Sense image quality up to 320°F, the range that 80% of the time matches the temperature range in most structural fires. In addition, only MSA delivers increased sensitivity in Low Sense mode with better high temperature image quality. The shaded color in both High and Low Sense indicates the Evolution 5200's Heat Seeker PLUS.

Evolution 5200HD² TIC Performance

Most TICs sacrifice high-sense imagery to make sure they perform in higher temperatures. With the widest range of high sense mode and the highest sensitivity in low sense mode, the Evolution 5200HD² gives you both high quality imagery and wide temperature ranges—there's no sacrifice, just performance! The Heat Seeker PLUS provides image detail shading.

Evolution 5600 TIC Performance

The Evolution 5600 TIC offers the widest high sense operating range of any Fire Service TIC in high heat conditions. The Heat Seeker indicator allows the user to easily locate hot spots and the seat of the fire, and is effective in High and Low Sensitivity. In fact, this TIC has the highest SENSITIVITY in Low Sensitivity mode of any fire service TIC, which extends the dynamic range for better image distinction at higher scene temperatures. The Evolution 5600 TIC's indigo 120 x 120 vanadium oxide microbolometer provides excellent image quality in a small format TIC.

Competitive Performance

The limited High Sense temperature range on competitive TICs means that better image quality is lost sooner. Low Sense then becomes the standard operating mode, using only a fraction of the total available sensitivity. In addition, competitive TICs lack Heat Seeking color in High Sense mode, an important tool to determine the presence and direction of the fire.

Low Cost – High Value

As Fire Service TICs become more affordable, MSA again takes the lead by adding new features and increasing performance—while lowering both initial and lifetime costs. Only MSA offers a 2-year sensor warranty—twice the coverage of competitive TICs! The increased value of MSA TICs is realized through expanded TIC uses, time saved and SAFETY—every day!

Also – Only From MSA:
• Instant On
• Warnings on all Shut Downs
• Temp Bar and Digital Temp
• Instant Mode Switching
• Shutter Indicator
• 15% Low Sense Activation

Durability: MSA designs, manufactures and tests to existing standards that include:

•Water/Dust Ingress . . . . .International Standard CEI, IEC 529, IP 67 Classification

•Direct Flame/Heat Exposure . . . . .Simulated NFPA1981-2002 Edition, NFPA 1982-1998

•Vibration . . . . .Edition MIL-STD-810E Category 1 Loose Cargo

•Radio Frequency Interference . . . . .Transport CE/EN50081-2:1992, EN 50082-2:1992, FCC

•Rollover (Truck Charger) . . . . .Part 15 Simulated NFPA 1901-12, 1.7

* For additional information on TIC performance, see MSA's series of *Emergency Responder Thermal Imaging Magazines,* Bulletins 3400-55, 3400-56, 3400-57 and 3400-58.

Thermal Imaging

Evolution® 5200 TIC

It's an Evolution – and It's All About SAFETY!

Introducing the new Evolution 5200 Fire Service Thermal Imaging Camera – with Next Generation Performance and New Exclusive Features available only from MSA!

High Performance Safety
- 320°F High Sense Mode Range – gives high image definition over the widest temperature range of any Fire Service TIC
- Twice the Low Sensitivity in the 320° to +1000°F range, compared to all other Fire Service TICs – for great imaging!

It all adds up to the highest **ISDR***
of any Fire Service TIC – with clearer, sharper, more detailed images over the entire temp range.

***I**nstantaneous **S**cene **D**ynamic **R**ange is the combined value of a sensor's sensitivity and temperature range to determine the number of temperature differences that can be seen at any given instant.

Evolution 5200 TIC Configurations

10063768	Evolution 5200 TIC with 110-220V charger and one battery
10063767	Evolution 5200 TIC with 110-220V charger, Quick-Temp, Heat Seeker, 2 batteries, wrist strap, carrying case and reflective trim kit
10063766	Evolution 5200 TIC with truck-mounted charger, Quick-Temp, Heat Seeker, 2 batteries and wrist strap
10063765	Evolution 5200 TIC with 110-220V charger, Quick-Temp, Heat Seeker, 2 batteries, Retractable Lanyard, carrying case and reflective trim kit
10063764	Evolution 5200 TIC with truck-mounted charger, Quick-Temp, Heat Seeker, 2 batteries and Retractable Lanyard
10063763	Evolution 5200 TIC with 110-220V charger, Quick-Temp, Heat Seeker, 2 batteries, shoulder strap, carrying case and reflective trim kit
10063762	Evolution 5200 TIC with 110-220V charger, 2 batteries and carrying case
10063761	Evolution 5200 TIC with truck-mounted charger and 2 batteries

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Evolution 5200 TIC, configured exactly the way you want it. See Bulletin 3400-50-MC for more information.

Features	Benefits
Widest High Sense Operating Range on any Fire Service TIC conditions	Provides better performance in high heat.
Highest Low Sensitivity Mode of any Fire Service TIC	Extends the dynamic range for better image distinction at higher scene temperatures.
Quick-Temp Temperature Measurement	Gives users a digital temperature measurement along with a temperature scale measurement to determine advancing heat.
Heat Seeker PLUS Indicator	Allows the user to easily locate hot spots and the seat of the fire. Effective in High and Low Sensitivity.
New Internal Mounting Foam	60% increase in heat tolerance. Protects system electronics from rough handling. Insulates sensor and electronics.
Microbolometer technology (vanadium oxide)	Extremely sharp image.
3-1/2-inch display	Team of users gets full view of the action.
Revolutionary ergonomic design	Easy handling and integration.
Reflective ID label kit	Allows user to personalize the TIC to a specific station/department with a choice of different color labels.
Unique high-impact bumper protection system	Drop protection from any angle—outstanding durability.

Accessories for all Evolution 5000 Series TICs

10041100	Charger 110-220V AC with cigarette lighter adapter	10040005	Carabiner
		10039603	Sun Shroud
10038412	Lithium Ion Battery	10062184	Reflective Label ID Kit
10067565	Vehicle-Mounted Charger	10038970	Disposable Display Covers - Clear
10039516	Wrist Strap	10067707	Non-Charging Mounting Bracket
10039515	Shoulder Strap	10040229	Tripod Adapter
10040226	Retractable Lanyard	10071750	Video Capture System

View through the Evolution 5200HD² TIC

Evolution® 5200HD² TIC

Proven handheld thermal imaging camera with a high ISDR* for the Fire Service. Best-in-class image quality provides clearer, sharper, larger, more detailed images in all temperatures. With nominal image resolution of 80,000 pixels; 4 times the picture elements of other TICs; 38µ pixel pitch; 3.5" display. Optional 2X digital zoom, Heat Seeker, and Quick Temp features.

- Gives you the best unparalleled image in firefighting
- Shows the highest image definition over the widest temperature range of any Fire Service TIC
- Offers optional highly functional 2X Digital Zoom for enhanced picture imagery in Fire Service applications like search and rescue
- Combines today's most advanced technology with a comfortable, time-proven, easy-to-use design

New!

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Evolution 5200HD2 TIC, configured exactly the way you want it. See Bulletin 3400-50-MC for more information.

Evolution 5200HD2 TIC Configurations	
10076618	Evolution 5200HD2 TIC complete with Heat Seeker Plus, Quick-Temp, Standard Charger, two batteries, wrist strap, carrying case, and Reflective Label Kit
10076619	Evolution 5200HD2 TIC complete with Heat Seeker Plus, Quick-Temp, Universal Truck Charger, two batteries, wrist strap, carrying case, and Reflective Label Kit
10076620	Evolution 5200HD2 TIC complete with Heat Seeker Plus, Quick-Temp, Standard Charger, two batteries, retractable lanyard, carrying case, and Reflective Label Kit
10076681	Evolution 5200HD2 TIC complete with Heat Seeker Plus, Quick-Temp, Universal Truck Charger, two batteries, and retractable lanyard
10076682	Evolution 5200HD2 TIC complete with Heat Seeker Plus, Quick-Temp, Standard Charger, two batteries, shoulder strap, carrying case, and Reflective Label Kit
10076683	Evolution 5200HD2 TIC complete with 2X Digital Zoom, Heat Seeker Plus, Quick-Temp, Standard Charger, two batteries, wrist strap, carrying case, and Reflective Label Kit
10076684	Evolution 5200HD2 TIC complete with 2X Digital Zoom, Heat Seeker Plus, Quick-Temp, Universal Truck Charger, two batteries, and wrist strap
10076685	Evolution 5200HD2 TIC complete with 2X Digital Zoom, Heat Seeker Plus, Quick-Temp, Standard Charger, two batteries, retractable lanyard, carrying case, and Reflective Label Kit
10076686	Evolution 5200HD2 TIC complete with 2X Digital Zoom, Heat Seeker Plus, Quick-Temp, Universal Truck Charger, two batteries, and retractable lanyard
10076687	Evolution 5200HD2 TIC complete with 2X Digital Zoom, Heat Seeker, Quick-Temp, Standard Charger, two batteries, shoulder strap, carrying case, and Reflective Label Kit

Evolution® 5600 TIC

MSA thermal imaging cameras are used by many of North America's largest fire departments. For big city performance with value-driven features, choose MSA's Evolution 5600 Thermal Imaging Camera with high resolution and detailed image quality. This versatile TIC provides detailed images (with a focal plane array of 120 x 120, nominal 15,000 pixels) over a wide temperature range, in addition to safety and other exclusive offerings of MSA's Evolution Series cameras.

MSA's highly functional Heat Seeker and Quick Temp functions deliver unmatched performance and superior image quality at all temperatures, employing an easy-to-use, time-tested design. User-friendly features and enhanced TIC performance help to maintain low lifetime costs. Most TICs trade image quality for a wider temperature range to keep the camera operating in high heat environments. However, the Evolution 5600 TIC provides refined image quality over comparable competitive TICs in Low Sensitivity mode.

Only MSA thermal imaging cameras deliver High Sense image quality at up to 320° F, the temperature range that most often matches that of structural fires.

In addition, only MSA offers Heat Seeker color images in both High and Low Sense modes. The affordable Evolution 5600 TIC offers high and low sensitivity, lightweight ergonomic design, Quick-Temp feature, and provides excellent image detail over a wide temperature range.

- Heat Seeker (provides colorization for hot objects)
- Instant on
- Instant mode switching
- Warnings on all shutdowns
- Shutter indicator
- Temperature bar and digital temperature

New!

Evolution 5600 TIC Configurations		
Temperature Readout		Description
Fahrenheit	Celsius	
10077996	10085464	Evolution 5600 TIC with Heat Seeker PLUS, Quick-Temp, standard charger, two rechargeable lithium ion batteries and plastic carrying case less NTSC video connector
10077997	10085465	Evolution 5600 TIC with Heat Seeker PLUS, Quick-Temp, universal truck charger and wo rechargeable lithium ion batteries less NTSC video connector
10077998	10085466	Evolution 5600 TIC with Heat Seeker PLUS, Quick-Temp, standard charger, two rechargeable lithium ion batteries and plastic carrying case with NTSC video connector
10077999	10085467	Evolution 5600 TIC with Heat Seeker PLUS, Quick-Temp, universal truck charger and two rechargeable lithium ion batteries, with NTSC video connector

Thermal Imaging

Evolution® 5000 Series Video Capture System

Principles of Operation

MSA's Video Capture is a video recording system for Evolution 5000 Series Thermal Imaging Cameras. It offers fast and simple video recording of the original screen for documentation and training purposes. The small and easy-to-use stand-alone unit can be mounted and removed on any Evolution 5000 Series Thermal Imaging Camera within seconds. A new camera is not required to use this feature.

The system conveniently uses a standard flash memory card [RS-MMC]. With a card reader, the video clips can be downloaded to a computer, stored, viewed and followed up for documentation. The system offers up to 2 hours recording capability, providing a complete overview of the environment and incident in which the camera was used.

The Video Capture System features the same housing as the Evolution Transmitter, offering the same high durability, as well as the same lithium ion rechargeable battery and charger used in the whole Evolution 5000 Series of Thermal Imaging Cameras.

Product Information

The Video Capture System (VCS) records the complete scene that the TIC sees. The system is capable of recording up to two hours of video, virtually eliminating the risk of a user missing critical information. The VCS is ideal for training and documentation purposes. A standard card reader stores the information and simply connects to a PC/laptop to download the recorded video. Still pictures can be captured from the video footage using available software programs like "Print Screen."

Evolution 5000 Series Video Capture System	
10071750	Video Capture Kit, complete with Video recorder, RS-MMC 512MB Storage Card, Card Reader, Instruction Manual, Battery and Carrying Case
10069792	RS-MMC Memory Card (512MB)

Remote Wireless Video Transmission

MSA's Remote Wireless Video Transmission Systems are modular high-performance systems which allow transmission of video signals from the Evolution TICs to fully contained receiving stations.

State-of-the-art 2.4 GHz technology and electronic and imaging components ensure that the Remote Wireless Video Transmission System provides optimum performance for the firefighter. The systems operate at one of two user-selectable frequencies and have been integrally designed to allow for maximum user flexibility.

Remote Wireless Video Transmission	
10048135	Deluxe Receiver Kit – Includes receiving station and integrated 12" display, magnetic-mounted omni-directional antenna, wall-type and cigarette lighter power supplies, and BNC to RCA adapters in a hard-sided Pelican case
10048134	Mini Receiver Kit – Includes receiver, magnetic-mounted omni-directional antenna, wall-type and cigarette lighter power supplies, connection cable for external monitor, and BNC to RCA adapters in a soft-sided, easily transported case
10019650	Optional High Gain directional antenna with tripod mount
10020290	10-ft video BNC cable
10047573	Evolution 5000 External Transmitter

Thermal Imaging is a valuable tool for the fire service, but should not be relied upon as a sole means of navigation and should not be used in place of standard firefighting practices. It is recommended that you obtain specialized fireground training prior to using any TIC in an actual fire or emergency situation. Training can be obtained through local or state fire training academies, several private training entities, or fire service distributors.

Tactical Thermal Imaging Training for Firefighters

Available from:

SAFE-IR, INC.
P.O. Box 297
Montgomery, NY 12549
Phone Toll-Free 1-877-472-3347
www.SAFE-IR.com

Instrumentation

Understanding Environmental Surveillance

Battery-powered, direct-reading instruments are classified as two groups—single-gas instruments or multiple-gas instruments—typically monitoring one or a combination of the following atmospheric conditions:

1. oxygen deficiency or enrichment;
2. the presence of combustible gas; and
3. the presence of certain toxic gases.

Depending on the capabilities of the instrument, monitoring can be conducted simultaneously for oxygen and combustible gas, or for oxygen, combustible gas and toxic gases. These devices are commonly referred to as 2-in-1, 3-in-1, 4-in-1 or 5-in-1 alarms.

No matter which type of instrument is used to check environmental gas concentrations, regular monitoring should be performed because a contaminant's level of combustibility or toxicity might increase even if it initially appears to be low or non-existent. In addition, oxygen deficiency can occur unexpectedly.

Atmospheric Composition

To determine the composition of an atmosphere, reliable instruments should be used to draw air samples. If possible, do not open the entry portal to the confined space before this step has been completed. Sudden changes in atmospheric composition within the confined space could cause violent reactions, or dilute the contaminants in the confined space, giving a false low initial gas concentration.

When testing permit-required spaces for acceptable entry conditions, always test in the following order:
1.   oxygen content
2.   flammable gases and vapors
3.   potential toxic air contaminants

Figure 1

Comprehensive testing should be conducted in various locations within the work area. Some gases are heavier than air, and tend to collect at the bottom of a confined space. Others are lighter, and are usually in higher concentrations near the top of the confined space. Still others are the same molecular weight as air, so they can be found in varying concentrations throughout the space. This is why test samples should be drawn at the top, middle and bottom of the space to pinpoint varying concentrations of gases or vapors (see *Figure 1*). The results of the

atmospheric testing will have a direct impact on the selection of protective equipment necessary for the tasks in the area. It may also dictate the duration of worker exposure to the environment of the space, or whether an entry will be made at all. Substance-specific detectors should be used whenever actual contaminants have been identified.

Figure 2

Figure 3

Combustible Gases

In order for combustion to occur, there must be three elements:
1. fuel
2. oxygen to support combustion
3. heat or a source of ignition

This is known as the fire triangle, but if you remove any one of the legs, combustion will not occur (see *Figure 2*).

The percentage of combustible gas in the air is important, too. For example, a manhole filled with fresh air is gradually filled by a leak of combustible gas such as methane or natural gas, mixing with the fresh air. As the ratio of gas to air changes, the sample passes through three ranges: lean, explosive and rich (see Figure 3). In the lean range, there isn't enough gas in the air to burn. On the other hand, the rich range has too much gas and not enough air. However, the explosive range has just the right combination of gas and air to form an explosive mixture. Care must be taken, however, when a mixture is too rich, because dilution with fresh air could bring the mixture into the flammable or explosive range. An analogy is the automobile that won't start on a cold morning (a lean atmosphere because the liquid gasoline has not vaporized sufficiently), but can be flooded with too much gasoline (a rich atmosphere with too much vaporization). Eventually, when the right mixture of gas and air finally exists (explosive), the car starts.

How Combustible Gas Monitors Work

To understand how portable combustible gas detection instruments work, it is first important to understand what is meant by the Lower Explosive Limit (LEL) and Upper Explosive Limit (UEL). When certain proportions of combustible vapors are mixed with air and a source of ignition is present, an explosion can occur. The range of concentrations over which this reaction can occur is called the explosive range. This range includes all concentrations in which a flash will occur or a flame will travel if the mixture is ignited (see *Figure 3*). The lowest percentage at which this can happen is the LEL; the highest percentage is the UEL.

Most combustible instruments display gas concentrations as a percentage of the LEL. Some models have gas readouts as a percentage by volume and others display both percent of LEL and percent combustible gas by volume. What's the difference? For example, the LEL of methane (the major component in natural gas) is 5 percent by volume, and the UEL is 15 percent by volume. If we slowly fill a room with methane, when the concentration reaches 2.5 percent by volume, it is 50 percent of the LEL; at 5 percent by volume it is 100 percent of the LEL. Between 5 and 15 percent by volume, a spark could set off an explosion.
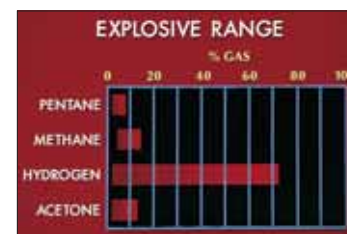
Figure 4

Different gases need different percent by volume concentrations to reach 100 percent of the LEL (see *Figure 4*). Pentane, for example, has an LEL of 1.5 percent. Instruments that measure in percent of the LEL are easy to use because, regardless of the gas, you are most concerned with how close the concentration is to the LEL.

Single-Gas Monitors for Oxygen Deficiency

Oxygen indicators measure atmospheric concentrations of oxygen. Concentrations are generally measured over a range of 0 to 25 percent oxygen in air, with readings being displayed on either digital readout or an analog meter.

Oxygen indicators are calibrated with uncontaminated fresh air containing a minimum of 20.8 percent oxygen. With some models, an alarm is activated when oxygen levels drop below 19.5 percent.

MSA   Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010

Single-Gas Monitors for Combustible Gases

Figure 5

Single-gas instruments for monitoring combustible gases and vapors are generally calibrated on pentane and are designed for general-purpose monitoring of hydrocarbon vapors. Such instruments operate by the catalytic action of a heated platinum filament in contact with combustible gases (see **Figure 5**). The filament is heated to operating temperature by an electric current. When the gas sample contacts the heated filament, combustion on its surface raises the temperature in proportion to the quantity of combustibles in the sample. A Wheatstone bridge circuit, incorporating the filament as one arm, measures the change in electrical resistance due to the temperature increases. This change indicates the percentage of combustible gas present in the sample.

Single-Gas Monitors for Toxic Gases

Compact, battery-powered devices can be used to measure levels of such gases as carbon monoxide (CO) or hydrogen sulfide (H_2S), depending on the model selected. Toxic gas monitors use electrochemical cells (see **Figure 6**). If the gas of interest enters the cell, the reaction produces a current output proportional to the amount of gas in the sample. With these instruments, audible and visible alarms sound if the gas concentration exceeds a preset level. These devices are well suited for use in confined spaces containing motors or engines, which can generate large quantities of CO, as well as in sewers, waste treatment plants and "sour crude" processing stations which tend to have hazardous volumes of H_2S.
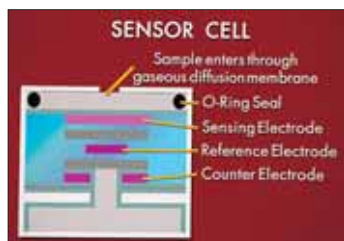
Figure 6

Multiple-Gas Monitors for Oxygen and Combustible Gas

In applications where it is necessary to determine oxygen and combustible gas levels simultaneously, 2-in-1 diffusion-type devices can be used. Sensors measure 0 to 100 percent of the LEL and oxygen from 0 to 25 percent. Remote sampling requires either a pump module or an aspirator bulb adapter.

Multiple-Gas Monitors for Oxygen, Combustible and Toxic Gases

Toxic gases and vapors, which can be inhaled or absorbed through the skin, are frequently found in confined spaces. Sometimes, these atmospheric hazards can also displace oxygen and may incapacitate the body's ability to maintain respiration. Some toxic gases and vapors can also cause long-term physical damage to the body in cases of repeated exposure.

A number of instruments are available to assist in detecting toxic gas. Pocket-size monitors operate by diffusion or an aspirator bulb. Larger instruments with built-in pumps draw samples from the immediate area or from outside the confined space work area when used with sampling lines.

Diffusion-type instruments are available for simultaneously measuring the LEL of combustible gases, oxygen levels and toxic levels (in parts per million) of H2S, CO and other toxic gases. Alarms also alert the user to low and high oxygen levels. Remote sampling pump adapters are available to convert these diffusion-type instruments into pump-style instruments.
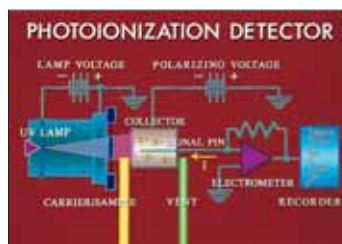
Figure 7

Photoionization Devices for Toxic Gases and Vapors

A photoionization detector, featuring microprocessor technology, uses ultraviolet light to ionize molecules of chemical substances in a gaseous or vaporous state (see **Figure 7**). A real-time digital readout allows the user to make an immediate determination of gas and vapor concentrations. Depending upon calibration input, gas and vapors are measured over a 0.1 to 10,000 ppm scale. Some instruments automatically compensate for signal loss due to humidity, which is inherent in all PID detectors.

Detector Tube Sampling Systems

Detector tube-type devices are recommended for conducting quick evaluations of potential hazards that cannot otherwise be measured. With detector tubes, a known volume of air is drawn through the tube, using a manually operated or battery-powered sampling pump. If gas or vapor is present in the air, chemically treated granules in the tube are stained a different color. By measuring the length of the color stain within the tube, users can determine concentration levels.

Most tubes available today are made of glass, have break-off tips, and are filled with treated chemical granules. They generally have a shelf life of 24 to 30 months.

One type of pump frequently used with a detector tube is a compact, bellows-type device. Accurate and repeatable sample flows can be assured by a shaft that guides the bellows during compression. Some models feature an end-of-stroke indicator that lets the user know when a full air sample has been drawn. Models with an integral stroke counter eliminate the tedious recording of multiple pump strokes.

Personal Sampling

Personal sampling is used to determine the concentration of airborne contaminants. Personal sampling pumps are designed to measure individual workers' exposures, so they typically are lightweight, belt-mounted, battery-powered devices.

The process of sampling entails drawing a predetermined volume of air through a filter designed to trap contaminants. The filter is contained in a plastic cassette, which is attached by plastic tubing to a sampling pump calibrated to draw a specific, known volume of air into the filter. After air samples are drawn, the filters are sent to a laboratory where they are examined to determine the level of exposure.

Personal sampling determines the concentration found in the "breathing zone" or the area near the worker's face, which is usually measured at or near the collar or lapel.

Calibration

To ensure the accuracy of all monitoring and detection equipment, calibration should be performed regularly. If the instrument reading differs significantly from the values of the known standard, the instrument should not be used until it has been adjusted or, if necessary, repaired.

Instrumentation

Solaris® Multigas Detectors

The Solaris Multigas Detector is an affordable, durable, reliable, easy-to-use portable instrument for detecting the presence of O_2, H_2S, CO and combustible gas. The Solaris Detector is designed to withstand rough handling in harsh environments. Best of all, it delivers MSA's commitment to quality at the smallest size and, even smaller price.

Features

- **Ergonomic Design**—For maximum comfort.
- **Alarm System**—World-class triple alarm system with 100+ decibel audible alarm, multiple high-intensity visual alarm and strong vibrating alarm.
- **Display Features**—Superior display features simultaneous gas concentration display, backlighting for easy reading and alphanumeric message bar for easy use.
- **Lightweight**—Under 8 oz., compact size that makes it easy to wear.
- **Durable**—Case with rubberized armor provides superior protection against liquid and dust ingress (IP 65 rated).
- **Long-life Battery**—Rechargeable lithium ion battery provides 14+ hours of continuous run time and delivers best-in-class performance in extreme conditions.
- **Galaxy Compatible**—Compatibility for computer automated calibration and record-keeping.
- **Sampling Pump Option**—Optional powered sampling pump with extensive contaminant filtering system.
- **Warranty**—Outstanding 2-year, all-inclusive warranty.

Solaris and Solaris FX Kits

Standard Kits (includes datalogging option)*

	Solaris Part No.
4-Gas Instrument	10048147
3-Gas (LEL, O_2, CO)	10048149
2-Gas (LEL, O_2)	10048214

Deluxe Kits (includes Econo-cal calibration kit, datalogging & sampling pump)*

	Solaris Part No.
4-Gas Instrument	10049297
3-Gas (LEL, O_2, CO)	10049298
2-Gas (LEL, O_2)	10049300

All of the above kits include a UL approved Solaris, battery charger, calibration cap assembly and instruction manual in CD-rom.

* To download the Solaris data the MSA data docking module (P/N 710946) must also be purchased—see p. 80.

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Solaris Detector, configured exactly the way you want it. You can choose from an extensive line of base instrument components and accessories. See the ATO chart on the following page to make your selections.

For accessories, please refer to page 80.

See pages 98–103 for calibration accessories.

MSA STELLAR® Series Gas Detection Instruments

Solaris® and Solaris FX Multigas Detector Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

A. **Datalog Options**	The datalog option enables the Solaris Multigas Detector to store exposure data for easy retrieval at a later time. To download the Solaris data the MSA datalog kit (p/n 710946) must also be purchased. Datalog option is now standard.	**Datalog Options**		**Code**	**Selection**
		Standard rechargeable instrument (includes Datalogging)		D	
		Standard Alkaline instrument (includes Datalogging)		B	

B. **Combustible Sensor Options**	If a combustible gas sensor is desired, two options are available: 0-100% LEL or 0-5% CH_4.	**Combustible Sensor Options**		**Code**	**Selection**
		None		0	
		0-100% LEL		L	
		0-5% CH_4		M	

C. **Oxygen Sensor Options**	To choose to have an oxygen sensor installed in your new Solaris Multigas Detector, choose selection 1. For no oxygen sensor, enter a "0".	**Oxygen Sensor Options**		**Code**	**Selection**
		None		0	
		O_2 Sensor		1	

D. **Toxic Sensor 1 Options**	To choose to have an carbon monoxide sensor installed in your new Solaris Multigas Detector, choose selection 1. For no oxygen sensor, enter a "0".	**Toxic Sensor 1 Options**		**Code**	**Selection**
		None		0	
		CO Sensor		1	

E. **ToxicSensor 2 Options**	To choose to have a hydrogen sulfide sensor installed in your new Solaris Multigas Detector, choose selection 1. For no hydrogen sulfide sensor, enter a "0". To choose to have a NO_2 sensor installed, choose 3. For no NO_2 sensor, choose 2.	**Toxic Sensor 2 Options**		**Code**	**Selection**
		None (H_2S Sensor not installed)		0	
		H_2S Sensor		1	
		None (NO_2 Sensor not installed)		2	
		NO_2 Sensor		3	

F. **Battery Charging Options**	A Solaris-specific battery charger must be used to recharge the batteries in the Solaris unit. Global battery charger comes with several international plug outlet configurations for countries outside of North America. For the Solaris with alkaline batteries, choose option "O".	**Battery Charging Options**		**Code**	**Selection**
		None		0	
		North American outlet-compatible		N	
		Global outlet-compatible		G	

G. **Instrument Approvals**	It is now possible to select the specific type of approval that a Solaris instrument possesses. The Solaris UL approval is recommended for the United States and Mexico. The Solaris CSA approval label is recommended for Canada. For the Solaris with alkaline batteries, choose option "A" for United States, Canada and Mexico.	**Instrument Approvals**		**Code**	**Selection**
		Underwriters Laboratory (UL)		U	
		CSA		C	
		CSA/US (Alkaline Version)		A	

H. **Sampling Pump**	It is now possible to combine the sampling pump and probe for the Solaris unit into one easy-to-use accessory. The pump probe is very versatile and can be attached to the Solaris instrument in seconds. The built-in Water Stop filter helps to ensure the sampling system is not contaminated with dirt and debris during use.	**Sampling Pump**		**Code**	**Selection**
		None		0	
		Universal pump probe		1	

I. **Calibration Kits**	MSA provides two options for performing instrument calibration. The cost-effective Econo-Cal (34 liter) cylinder and fixed flow regulator provides an economical means to calibrate the Solaris instrument. The Model RP calibration kit also has a fixed flow 0.25 lpm regulator and provides the user with a larger capacity (58 liter) calibration gas cylinder.	**Calibration Kit Options**		**Code**	**Selection**
		None		0	
		Econo-Cal Calibration Kit		1	
		Model RP Calibration Kit		2	

Your Model Part Number Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection …   A B C D E F G H I

A-SOLARIS- ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Instrumentation

Sirius® PID Multigas Detector

The Sirius Multigas Detector unit with PID Sensor gives users all they are looking for in a reliable, easy-to-use, durable package to detect volatile organic compounds, while measuring for combustible, toxic and oxygen deficient atmospheres.

Tremendous Flexibility—One PID and four gases in one instrument allows for detection of hundreds of chemicals.

Reliable PID Performance—MSA's own proprietary PID sensor design (patent-pending) provides users with excellent PID performance including humidity resistance, stable zero readings, and fast response and clear times to enable users to get their jobs done dependably.

User-Friendly Software—Easy-to-use software allows users to focus on their tasks at hand!

Superior, Proprietary PID Sensor Design—Reduces maintenance time and cost.

Flexible Configurations—This design combines two instruments into one the Sirius unit can be used with or without the PID sensor mode.

Loud, Attention-Grabbing Alarm—The Sirius Multigas Detector provides outstanding alarms to clearly warn users of a hazardous situation. A piercing alarm horn, resonating through a specially designed horn chamber, is designed into the Sirius unit to give users an audible warning in the event of an alarm condition. Multidirectional bright LED lights give users visible warning of alarm conditions that can be easily seen from any direction the Sirius unit is facing. A "Safe LED" light gives users confidence the unit is actively detecting gas by flashing every 15 seconds.

Interchangeable Lithium-ion and Alkaline Battery Packs—Allows for quick battery turn to keep users continually charged and ready to take action.

Easy Calibration and Compatibility with Galaxy Automated Test System—One-button calibration makes calibration simple for any user. Intelligent software frees users from complicated calibration adjustments.

Long-Term Storage Kit—Provides all the tools necessary to keep the Sirius Multigas Detector running if the unit has not been frequently used.

For accessories, please refer to page 80.

See pages 98–103 for calibration accessories.

Sirius Multigas Detector Kits (LEL)	Part #	10.6 eV	LEL	02	CO	H2S	Li Ion	Alka Bat	10 ft line	1 ft probe	Ret Line	Bl Boot	Cor Jac	Cal Kit	Data Log	Blk Cas	Std Cap	Lamp Cl Kit
Deluxe LEL 4-Gas Lithium Ion PID	10051141	•	•	•	•	•	•		•	•	•	•	•	•		•	•	
Deluxe LEL 3-Gas H2S Lithium Ion PID	10051142	•	•	•		•	•		•	•	•	•	•	•		•	•	
Deluxe LEL 3-Gas CO Lithium Ion PID	10051143	•	•	•	•		•		•	•	•	•	•	•		•	•	
Deluxe LEL 4-Gas Lithium Ion PID Datalog	10051144	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	
Deluxe LEL 4-Gas Lithium Ion PID less bt/jac	10051117	•	•	•	•	•	•		•	•	•			•		•	•	•
Industrial LEL 4-Gas Lithium Ion PID	10051146	•	•	•	•	•	•		•	•	•	•	•	•			•	
Industrial LEL 3-Gas H2S Lithium Ion PID	10051147	•	•	•		•	•		•	•	•	•	•	•			•	
Industrial LEL 3-Gas CO Lithium Ion PID	10051148	•	•	•	•		•		•	•	•	•	•	•			•	
Industrial LEL 4-Gas Lithium Ion PID no jackt	10051149	•	•	•	•	•	•		•	•	•	•					•	
Industrial LEL 4-Gas Lithium Ion PID with cal	10051150	•	•	•	•	•	•		•	•	•			•	•	•	•	
Economy LEL 4-Gas Alkaline PID	10051151	•	•	•	•	•		•									•	
Economy LEL 3-Gas H2S Alkaline PID	10051152	•	•	•		•		•									•	
Economy LEL 3-Gas CO Alkaline PID	10051153	•	•	•	•			•									•	
Economy LEL 4-Gas Lithium Ion PID	10051154	•	•	•	•	•	•										•	

| Sirius Multigas Detector Kits (CH₄)	Part #	10.6 eV	LEL	02	CO	H2S	Li Ion	Alka Bat	10 ft line	1 ft probe	Ret Line	Bl Boot	Cor Jac	Cal Kit	Data Log	Blk Cas	Std Cap	Lamp Cl Kit
Deluxe CH4 4-Gas Lithium Ion PID	10051177	•	•	•	•	•	•		•	•	•	•	•	•		•	•	
Deluxe CH4 3-Gas H2S Lithium Ion PID	10051178	•	•	•		•	•		•	•	•	•	•	•		•	•	
Deluxe CH4 3-Gas CO Lithium Ion PID	10051179	•	•	•	•		•		•	•	•	•	•	•	•	•	•	
Deluxe CH4 4-Gas Lithium Ion PID Datalog	10052511	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•	•
Industrial CH4 4-Gas Lithium Ion PID	10051181	•	•	•	•	•	•		•	•	•	•	•				•	
Industrial CH4 3-Gas H2S Lithium Ion PID	10051182	•	•	•		•	•		•	•	•	•	•				•	
Industrial CH4 3-Gas CO Lithium Ion PID	10051183	•	•	•	•		•		•	•	•	•	•				•	
Industrial CH4 4-Gas Lithium Ion PID no jac	10051184	•	•	•	•	•	•		•	•	•	•					•	
Economy CH4 4-Gas Alkaline PID	10051185	•	•	•	•	•		•									•	
Economy CH4 3-Gas H2S Alkaline PID	10051186	•	•	•		•		•									•	
Economy CH4 3-Gas CO Alkaline PID	10051187	•	•	•	•			•									•	
Economy CH4 4-Gas Lithium Ion PID	10051188	•	•	•	•	•	•										•	

Sirius® PID Multigas Detector Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

			Code	Selection
A. Photoionization Detector Lamp Option	To choose the standard 10.6 eV lamp for most VOC's, choose selection A. For the low energy 9.8 eV lamp with the most VOC discrimination, enter selection B.	**PID Lamp**		
		None	0	
		PID with 10.6 eV Lamp(0-2000 ppm)	A	
		PID with 9.8 eV Lamp	B	
B. Combustible Sensor Option	To choose to have your MSA 20L combustible sensor reading set to be displayed as 0-100% LEL, enter selection "L". For a display of 0-5% methane, enter an "M".	**Combustible Sensor**		
		None	0	
		0-100% LEL	L	
		0-5% Methane	M	
C. Oxygen Sensor Options	To choose to have an oxygen sensor installed in your new Sirius Multigas Detector, enter selection 1. For no oxygen sensor, enter a "0".	**Oxygen Sensor**		
		None	0	
		Oxygen (0-25%)	1	
D. Carbon Monoxide Sensor Option	To choose to have a carbon monoxide sensor installed in your new Sirius Multigas Detector, enter selection 1. For no carbon monoxide sensor, enter a "0".	**Carbon Monoxide Sensor**		
		None	0	
		Carbon Monoxide (0-500 ppm)	1	
E. Hydrogen Sulfide Sensor Option	To choose to have a hydrogen sulfide sensor installed in your new Sirius Multigas Detector, enter selection 1. For no hydrogen sulfide sensor, enter a "0".	**Hydrogen Sulfide Sensor**		
		None	0	
		Hydrogen Sulfide (0-100 ppm)	1	
F. Battery Pack & Charger Options	You may choose between MSA's lithium ion battery pack which includes a standard lithium ion battery charger, or the convenience of an alkaline battery pack. You may also choose to have both battery pack types included with your new Sirius Multigas Detector.	**Battery Pack/Charger**		
		None	0	
		Lithium ion, includes charger & cord	A	
		Replaceable alkaline	B	
		Both Lithium ion and replaceable alkaline battery packs	C	
G. Vehicle Charger Option	If you would like to order the vehicle charger for your new Sirius Multigas Detector, enter selection 1.	**Vehicle Charger**		
		None	0	
		Vehicle Charger	1	
H. Sampling Lines	MSA's Quick-Connect sampling lines are of the highest quality materials, guaranteed to provide accurate sampling concentrations. Sirius Multigas Detector sampling lines all includes a Quick-Connect air-line fitting for easy attachment and tight seal. For sampling jet fuel, enter selection 3 for the 10' teflon sampling line option, or selection 4 for the 25' sampling line option.	**Sampling Lines**		
		None	0	
		10-foot polyurethane	1	
		25-foot polyurethane	2	
		10-foot teflon (for jet fuel sampling)	3	
		25-foot teflon (for jet fuel sampling)	4	
		3-foot polyurethane coiled	5	
I. Sampling Probes	MSA's sampling probes are durable & comfortable to use. The built in Water-Stop filter ensures that your sampling system is not contaminated with dirt and debris if the probe tip is dipped in water. You must order a probe if you order a sampling line, as we strongly recommend that you operate the instrument with this filter in place.	**Sampling Probes**		
		None	0	
		1-foot Probe	1	
		3-foot Probe	2	
		8-inch Probe	3	
J. Carrying Attachments	While a high-strength stainless steel D-Ring is offered with this instrument at no extra charge, there are three other options for handling the instrument: the retractable carrying line for use with the D-Ring, the shoulder harness and the wrist harness to be used on the user's arm with a Level A suit.	**Carrying Attachments**		
		None	0	
		Retractable Carrying Line with Belt Clip	1	
		Shoulder Harness	2	
		Wrist Harness	3	
K. Instrument Jackets and Boots	To offer the highest level of of instrument protection, you may choose a protective black rubber boot and harness, or a cordura jacket. You may also order both options by choosing selection C.	**Instrument Jacket/Boot**		
		None	0	
		Black Boot with Harness	B	
		Cordura Jacket with Harness	C	
		Black Boot, Cordura Jacket and Harness	D	
L. Calibration Kits	You may choose one of two calibration options for your Sirius Multigas Detector. The fixed-flow .25 lpm regulator includes a multigas calibration cylinder and also an isobutylene calibration gas cylinder if a PID selection is chosen. You may also order just the isobutylene calibration kit with gas cylinder.	**Calibration Kits**		
		None	0	
		Econo-Cal Fixed-Flow Regulator Calibration Kit (includes multigas and isobutylene cylinders)	1	
		Model RP Fixed-Flow Regulator Calibration Kit (includes multigas and isobutylene cylinders)	2	
		Isobutylene Calibration Kit (includes gas cylinder)	3	
M. Data Communications Kit	If you need to track the readings and operations of your Sirius Multigas Detector, consider ordering the instrument with the optional built-in datalogging module. The option also provides TWA and STEL capabilities.	**Data Communications**		
		None	0	
		Data Link Module	1	
		Data Link Module and Software Kit	2	
N. Packaging	Your new Sirius Multigas Detector may be protected by a standard black plastic case, or by a black premium field case. You may also choose the option of a long-term storage kit case for emergency response, large enough to hold the Sirius Multigas Detector, calibration cylinders, spare sensors, spare PID lamp and lithium ion battery pack with charger, spare alkaline battery pack, lamp cleaning kit and simple-to-read and understand refresher instructions.	**Packaging**		
		Standard shipping carton	0	
		Standard black PVC case	1	
		Premium black field case	2	
		Long-term storage kit case	4	
		Long-term storage kit basic includes PID lamp, add $180 each sensor	5	
O. PID Lamp Cap	The standard easy-access lamp cap is included with your Sirius Multigas Detector at no extra charge. You may also choose a tamper-proof lamp cap.	**PID Lamp Cap**		
		None	0	
		Standard easy-access lamp cap	S	
		Alternative tamper-proof lamp cap	T	

Your Model Part Number Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection … A B C D E F G H I J K L M N O

A-SIRIUS-

Orion® Multigas Detector

The Orion Multigas Detectors is a low-cost, reliable, and easy-to-use portable instruments for detecting the presence of O_2, H_2S, CO and combustible gas. The Orion Multigas Detector features MSA's long-life 20L combustible sensor and will stand up to the roughest handling in even the toughest environments.

Features
- One-button calibration
- Long-life battery
- Carbon-filled nylon case
- Tough, durable construction
- Built-in pump
- Galaxy compatibility
- Large, easy-to-read display
- Durable sensors
- Link™ Software compatibility

Approvals

The Orion Multigas Detectors has been designed to meet intrinsic safety testing requirements in certain hazardous atmospheres. The Orion Multigas Detector has been approved by UL and cUL for use in Class I, Division I, Groups A, B, C, and D.

Orion Multigas Detector Kits

STELLAR® Series — MSA Gas Detection Instruments

	LEL	O2	CO	H2S	NiMH Battery & Charger	Alkaline Battery	Calibration Cap	Internal Pump	10ft Line	1ft Probe	Orange Cordura Case	Calibration Kit	Black Economy Case	Boot	Orion Part No.
Deluxe 4-gas, datalog	•	•	•	•	•			•	•	•	•	•	•	•	10030399
Deluxe 4-gas	•	•	•	•	•			•	•	•	•	•	•	•	10025932
Deluxe 3-gas H2S	•	•		•	•			•	•	•	•	•	•	•	10025935
Deluxe 3-gas CO	•	•	•		•			•	•	•	•	•	•	•	10025938
Industrial 4-gas	•	•	•	•	•			•	•	•	•			•	10025931
Industrial 4-gas, less jacket	•	•	•	•	•			•	•	•				•	10030420
Industrial 3-gas H2S	•	•		•	•			•	•	•	•			•	10025934
Industrial 3-gas CO	•	•	•		•			•	•	•	•			•	10025937
Economy 4-gas, NiMH	•	•	•	•	•		•								10030398
Economy 4-gas	•	•	•	•		•	•								10025930
Economy 3-gas H2S	•	•		•		•	•								10025933
Economy 3-gas CO	•	•	•			•	•								10025936

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Orion Multigas Detector or the Orion FX Multigas Detector, configured exactly the way you want it. You can choose from an extensive line of base instrument components and accessories. See the ATO chart on the following page to make your selections.

For accessories, please refer to page 81.

See pages 98–103 for calibration accessories.

Orion® Multigas Detector Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

A. Combustible Sensor Options

To choose to have MSA's own long-life 20L combustible sensor installed in your instrument (Orion Multigas Detector only), choose selection 1. For no combustible sensor, enter a "0."

Combustible Sensor	Code	Selection
None	0	
% LEL (Pentane, 0–100%) **Orion** Multigas Detector only	1	

B. Oxygen Sensor Options

To choose to have an oxygen sensor installed in your new Orion Multigas Detector, choose selection 1. For no oxygen sensor, enter a "0."

Oxygen Sensor	Code	Selection
None	0	
Oxygen (0–25%)	1	

C. Carbon Monoxide Sensor Options

To choose to have a carbon monoxide sensor installed in your new Orion Multigas Detector, choose selection 1. For no carbon monoxide sensor, enter a "0."

Carbon Monoxide Sensor	Code	Selection
None	0	
Carbon Monoxide (0–999 ppm)	1	

D. Hydrogen Sulfide Sensor Options

To choose to have a hydrogen sulfide sensor installed in your new Orion Multigas Detector, choose selection 1. For no hydrogen sulfide sensor, enter a "0."

Hydrogen Sulfide Sensor	Code	Selection
None	0	
Hydrogen sulfide (0–200 ppm)	1	

E. Battery Pack Options

You can choose between MSA's NiMH rechargeable batteries which will run your Orion Multigas Detector for up to 16 hours in pump mode and 20 hours in diffusion mode, or you can choose the convenience of alkaline batteries. For ultimate flexibility, choose "both!"

Battery Pack	Code	Selection
Standard NiCd Rechargeable (comes with standard AC charger)	A	
Replaceable alkaline	B	
Both NiMH and alkaline	C	

F. Battery Charger Options

If you order your Orion Multigas Detector with a rechargeable battery pack, the charger is included in the price. If you want the optional vehicular charger adapter, choose selection "1."

Battery Charger	Code	Selection
None/Standard AC charger	0	
Vehicular charger	1	

G. Sampling Methods

The Orion Multigas Detector's patented Pulsecheck™ pump technology leads the industry. If you chose the built-in pump, operating directly off the instrument batteries, you are assured of an audible pump fault alarm and you do not need to maintain a second set of batteries. If you are ordering diffusion instruments, a calibration cap will be included to calibrate your instruments.

Sampling/Calibration Methods	Code	Selection
None	0	
Integral, Pulsecheck pump	P	
Manual aspirator model	A	

H. Sampling Lines

MSA's high-speed sampling lines are of the highest quality materials guaranteed to not alter sample concentration. Screw fittings with O-Ring couplings at each end ensure there are no leaks when the system is operating.

Sampling Lines	Code	Selection
None	0	
3-foot coiled	1	
5-foot coiled	2	
10-foot	3	
15-foot	4	
25-foot	5	

I. Sampling Probes

MSA's sampling probes are durable and comfortable to use. The built-in Water Stop filter ensures your sampling system is not contaminated with dirt and debris if the probe tip is dipped in water. You must order a probe if you order a sampling line as we strongly recommend you operate the instrument with this filter in place.

Sampling Probes	Code	Selection
None	0	
1-foot straight	1	
3-foot straight	2	
3-foot, holes near tip	3	
3-foot, holes near handle	4	
Hot-gas sampling probe	5	

J. Carrying Attachments

While a high-strength, nylon clip is offered with the instrument at no extra charge, a swivel belt loop kit, which allows quick release from your belt with a half turn, is also available.

Belt Clip	Code	Selection
Standard nylon	0	
Swivel belt loop	1	

K. Instrument Jacket

For the highest levels of environmental and rough handling protection, you can order from a variety of jackets and boots for your Orion Multigas Detector.

Instrument Jacket	Code	Selection
None	0	
Black rubber boot	B	
Black leather case	L	
Orange cordora jacket	C	
Black rubber boot/Orange cordora	D	
Red rubber boot	R	

L. Calibration Kits

You can choose one of two calibration options for your Orion Multigas Detector. The flexible RP kit provides a constant flow regulator that is reused and provides the greatest accuracy. The squirt gas test kit provides a very economical means to verify instrument calibration.

Calibration Kit Options		Code	Selection
None		0	
RP Calibration Kit (includes gas)	(Only available in ATO for Combustible, O₂, CO, H₂S— other gases must be purchased separately.)	1	
Squirt Gas Check Kit (includes gas)		2	

M. Data Communications Options

If you need to track the readings and operation of your Orion Multigas Detectors, consider ordering them with the optional built-in datalogging module. This option also provides STEL and TWA capabilities. This option required for Galaxy operation.

Data Communications	Code	Selection
None	0	
Orion link module	1	
Module and download software	2	

N. Packaging Options and Carrying Cases

You can further protect your Orion Multigas Detector with optional carrying cases. For ease of transport and handling, these cases can be even be ordered to accommodate calibration accessories. With the premium cases, a simple-to-understand training videotape is included at no extra charge.

Packaging & Carrying Cases	Code	Selection
Standard shipping container only	0	
Black plastic case w/ space for cylinder, with video	1	
Heavy-duty case with video	2	
Large, heavy-duty case with video and space for 2 cylinders	3	
Orange plastic case w/ space for cylinder, with video	4	

Your Model Part Number

Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection … A B C D E F G H I J K L M N

A-ORION- ☐-☐-☐-☐-☐-☐-☐-☐-☐-☐-☐-☐-☐-☐

Instrumentation

Orion®*plus* Multigas Detectors

Compact. Durable. Ingenious. Versatile and rugged, the updated Orion plus IR Detector offers five gases with infrared and a wide range of sensor options. Our newly developed array of IR sensors will detect CO_2 or hydrocarbons in LEL range or up to 100% by volume. MSA's 20L catalytic combustion sensors are "best in class" silicon-resistant and will reliably detect up to 100% LEL. Available toxic sensors include ammonia, chlorine and many other choices. Simply choose your IR sensor, add two toxic sensors and finish your unit with an oxygen and an LEL sensor.

Features
- Large, fully-graphic back-lit display
- Data-logging standard using ORIONLINK® software
- Carbon-filled nylon case protectsagainst RFI and corrosive gases
- Long-life battery with three-hour recharge
- Built-in pump with electrical PermaCheck™ function standard
- Two-year warranty on case, sensors, electronics and mechanical components

Updated!

Orion*plus* Multigas Detector Kits

All kits are standard equipped with datalog, internal pump and comes with rechargeable battery pack, charger, protective rubber boot, PTFE sampling probe with 5ft line and software (p/n 655505 is needed to read data).

Part #	O_2	LEL	CO	H_2S	NH_3	Cl_2	PH_3	SO_2
10074944	•	•	•		•			
10074943	•	•	•			•		
10074949	•	•		•	•			
10074946	•	•		•		•		
10074951	•	•			•		•	
10074950	•	•		•				•
10074945	•	•	•					•

Infra Red Versions

Part #	IR	O_2	LEL	CO	H_2S
10074947	IR CO_2 (0-10% Vol)	•	•	•	•
10074941	IR CH_4 (0-100% Vol)	•	•	•	•
10074942	IR HC butane (0-25% Vol)	•	•	•	•

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to custom order the Orion plus Multigas Detector configured exactly the way you want it. See the ATO chart on the following page to make your selections.

*MSA STELLAR® Series
Gas Detection Instruments*

Orion*plus* Multigas Detector for the Fire Service Assemble-to-Order (ATO) Options

A. Combustible Sensor Option

Choose your sensor calibration with MSA's long-life 20L combustible sensor. Choose selection "L" for a pentane calibration or "M" for a methane calibration. For no combustible sensor, enter a "0".

Combustible Sensor	Code
without combustible sensor	0
0–100% LEL Pentane (1.4 vol%)	L
0–100% LEL methane (5.0 vol%)	M

B. Oxygen Sensor Option

To choose to have an oxygen sensor installed in your new Orion plus IR Detector, choose selection 1. For no oxygen sensor, enter a "0".

Oxygen Sensor	Code
without oxygen sensor	0
0–25% Vol. O_2	1

C. Toxic 1 Sensor Option

Choose your first toxic gas sensor from this extensive list to configure your new Orion plus IR Detector for your application; for no toxic sensor, enter an "0".

Toxic 1 Sensor	Code
None	0
0–999 ppm carbon monoxide (CO)	B
0–200 ppm hydrogen sulfide (H_2S)	C
0–30 ppm hydrogen cyanide (HCN)	E
0–10 ppm chlorine (Cl_2)	F
0–100 ppm ammonia (NH_3)	G
0–20 ppm sulfur dioxide (SO_2)	H
0–20 ppm nitrogen dioxide (NO_2)	I
0–1 ppm chlorine dioxide (ClO_2)	J
0–5 ppm phosphine (PH_3)	K
0–1 ppm ozone (O_3)	L
0–1 ppm phosgene ($COCl_2$)	M

D. Toxic 2 Sensor Option

Choose your second toxic gas sensor from this list to configure your new Orion plus IR Detector for your application; for no toxic sensor, enter an "0".

Toxic 2 Sensor	Code
None	0
0–999 ppm carbon monoxide (CO)	B
0–200 ppm hydrogen sulfide (H_2S)	C
0–30 ppm hydrogen cyanide (HCN)	E
0–10 ppm chlorine (Cl_2)	F
0–100 ppm ammonia (NH_3)	G
0–20 ppm sulfur dioxide (SO_2)	H
0–20 ppm nitrogen dioxide (NO_2)	I
0–1 ppm chlorine dioxide (ClO_2)	J
0–5 ppm phosphine (PH_3)	K
0–1 ppm ozone (O_3)	L
0–1 ppm phosgene ($COCl_2$)	M

E. Advanced IR Sensor Options

MSA offers a range of advanced IR options which will operate in the absence of background oxygen for inert applications. If your application require an IR sensor for %CO2 or inert %LEL, choose "H" for 0-100% vol methane. For general hydrocarbon monitoring (0-25% vol), choose "J". When no IR sensor is required, enter an "0". Contact MSA for other IR sensors options.

IR Sensor	Code
None	0
0–10 vol % carbon dioxide (CO_2)	C
0–50 vol % carbon dioxide (CO_2)	D
0–100 % LEL propane (C_3H_8)	E
0–100 % vol propane (C_3H_8)	F
0–100 % vol methane (CH_4)	H
0–25 % vol hydrocarbon (butane)	J

F. Battery Pack Options

You can choose between MSA's NiMH rechargeable batteries, or you can choose the convenience of alkaline batteries. For ultimate flexibility, choose both!

Battery Pack	Code
NiMH battery with PCBA & charger with cradle	A
Alkaline battery pack	B
NiMH & alkaline pack (A & B)	C

G. Battery Charger Options

If you order your Orion Multigas Detector with a rechargeable battery pack, the charger is included in the price. If you want the optional vehicular charger adapter, choose selection "1."

Vehicle Charger	Code
None/Standard AC charger	0
Vehiclular charger	1

H. Sample Line

MSA does not recommend sampling reactive gases; however if necessary, MSA's high-speed PTFE sampling line is of the highest quality material, guaranteed to minimize altering of the sample concentration.

Sample Line	Code
None	0
Customized 5' PTFE line for Orionplus	1

I. Sample Probe

A 1' PTFE sampling probe with built-in water-stop filter ensures that your sampling system is not contaminated with dirt and debris if the probe tip is dipped in water. You must order a probe if ordering a sampling line. We strongly recommend operating the instrument with this filter in place.

Carrying Attachments	Code
None	0
Sampling PTFE probe	1

J. Carrying Attachments

While a high-strength, nylon clip is offered with the instrument at no charge, a swivel belt loop kit allowing quick release with a half turn, is also available.

Belt Clip	Code
Unbreakable nylon	0
Swivel belt loop	1

K. Instrument Jacket

For environmental and rough handling protection, a variety of jackets and boots is available for your Orionplus IR Detector.

Instrument Jacket	Code
None	0
Black rubber boot	B
Leather case	L
Orange cordura jacket	C
Red rubber boot	R

L. Calibration

Use a minimal length (1-2 ") of the PU tubing to connect to your designated regulators for reactive gases to your instrument.

Calibration	Code
2-ft PU tubing	0

M. Data Communications Kit

To track readings and operation of your Orionplus IR Detector, this unit is standard-equipped with datalogging and STEL/TWA capabilities. To conveniently track stored records, order the IR Receiver, as software comes standard with each unit.

Data Communications	Code
None	0
IR receiver (JetEye)	1

N. Packaging Options & Carrying Cases

You can further protect your Orionplus IR Detector with optional carrying cases. For ease of transport and handling, these cases can be ordered to accommodate calibration accessories.

Packaging & Carrying Cases	Code
Standard carton	0
Economy plastic case	1
Hard plastic with space for 2 cylinders	2
Red economy plastic	3

Your Model Part Number

Please write in numbers from selections above in appropriate boxes and contact your MSA Fire Service distributor to place your order.

Selection … A B C D E F G H I J K L M N

A-ORION*plus***-** ☐ - ☐ - ☐ ☐ ☐ ☐ - ☐ - ☐ ☐ ☐ - ☐ ☐ ☐

Instrumentation

ALTAIR® 4 Multigas Detector

The ALTAIR 4 Multigas Detector for LEL, CO, H$_2$S, and O$_2$ is a super-durable, competitively-priced, personal multigas detector. The ALTAIR 4 Multigas Detector is the only portable gas detector with an optional MotionAlert™ feature if a user should become disabled due to unforeseen hazards. When enabled, the MotionAlert feature will activate if the instrument does not detect motion for 30 seconds, and is ideal for confined space entry applications. This unique gas detector function is easily turned off by the user if desired.

Features

- MotionAlert feature plus audible, visual, and vibrating alarms
- Most rugged instrument available
- Large buttons for easy operation
- 20-hour battery run time when fully charged
- Tested to IP67
- Galaxy® System compatible
- Global approvals
- Economically priced
- MSA Link™ Software-ready
- QuickCheck™ Test Station available for fast, easy bump testing

ALTAIR® 4 Multigas Detector

ALTAIR 4 Multigas Detector (UL approved), with data logging feature, charger, calibration cap and tubing, CD manual

UL Approval	CSA Approval	Description
10085981	10089091	ALTAIR 4 Multigas Detector (LEL, O$_2$, CO, H$_2$S)
10085989	10089094	ALTAIR 4 Multigas Detector with MotionAlert feature (LEL, O$_2$, CO, H$_2$S)
10089103	10089092	ALTAIR 4 Multigas Detector (LEL, O$_2$, CO)
10089105	10089095	ALTAIR 4 Multigas Detector with MotionAlert feature (LEL, O$_2$, CO)
10089104	10089093	ALTAIR 4 Multigas Detector (LEL, O$_2$)
10089106	10089096	ALTAIR 4 Multigas Detector with MotionAlert feature (LEL, O$_2$)

Accessories

10069894	SS Suspender clip
10089322	Belt clip
10048280	34L quad gas mix (1.45% CH$_4$, 15% O$_2$, 60 ppm CO, 20 ppm H$_2$S)
10045035	58L quad gas mix (1.45% CH$_4$, 15% O$_2$, 60 ppm CO, 20 ppm H$_2$S)
10047596	Universal pump probe (UL)
10055576	Universal pump probe (CSA)
10089321	Calibration assembly (cap, tube, connector)
10082834	JetEye IR adapter with USB connector
10088099	MSA Link Software CD-ROM
10086639	Charger cradle assembly
10087913	North American power supply

Sensors

10089116	Combustible sensor
10046946	O$_2$ sensor
10089117	CO/H$_2$S duo-tox sensor
10089118	Sensor replacement kit (duo-tox, O$_2$, combustible)

Specifications

Gas	Range	Resolution
LEL	0–100%	1%
O$_2$	0–25% vol	0.1% vol
CO	0–999 ppm	1 ppm
H$_2$S	0–200 ppm	1 ppm

ALTAIR® 4 Multigas Detector Assemble-to-Order (ATO) Options

• To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

		Instrument Type	Code	Selection
1. **Instrument Type**	Choose your instrument type. For 'standard' choose "S". To have your Altair 4 equipped with the MotionAlert feature to indicate 'man-down' please choose "A".	Standard	S	
		MotionAlert Feature	A	

		Combustible Sensor Options	Code	Selection
2. **Combustible Sensor Options**	Choose your combustible sensor calibration. To select 0-100% LEL Pentane please choose "L"; for 0-5% Vol Methane choose "M". For no combustible sensor select "0" for none.	None	0	
		LEL 0-100% Pentane	L	
		0-5% Vol Methane	M	

		Oxygen Sensor Options	Code	Selection
3. **Oxygen Sensor Options**	To choose to have an oxygen sensor installed in your new Altair 4 Multigas Detector, please select "1". For no oxygen sensor please select "0".	None	0	
		0-25% Vol	1	

		Toxic Sensor Options	Code	Selection
4. **Toxic Sensor Options**	To configure your new Altair 4 Multigas Detector for your application choose "1" for both CO and H_2S sensors. For no toxic sensor, enter a "0".	None	0	
		0–999 ppm CO and 0–200 ppm H_2S	1	
		0–999 ppm CO	2	
		0–200 ppm H_2S	3	

		Power Supply	Code	Selection
5. **Power Supply**	Select your power supply for your region, and add an instrument cradle to firmly sucure your instrument while charging on the shelf or in your Fire Truck.	None	0	
		North American	N	
		North American w/cradle	M	

		Approval Label	Code	Selection
6. **Approval Label**	Choose the applicable approval label for your area. For USA choose "U". For Canada choose "C".	UL/CUL	U	
		CSA	C	

		Extended Warranty	Code	Selection
7. **Extended Warranty**	MSA offers a 'back-to-back' full warranty. Choose "0" for the standard 2 year warranty. Choose "1" for an additional year warranty (3 years total) or "2" for 2 additional years warranty (4 years total), including case, electronics, batteries & sensor replacement.	2 years standard	0	
		3 years total	1	
		4 years total	2	

		Packaging	Code	Selection
8. **Packaging**	To order a 10-unit bulk package, choose "1" (1 instrument version per package). To order the standard single unit carton choose "0".	Single carton	0	
		10-unit bulk package	1	

Your Model Part Number   Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection …   1   2   3   4   5   6   7   8

A-ALT4- ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

Coming Soon!
ALTAIR® 5 Multigas Detector

The ALTAIR 5 Multigas Detector is MSA's latest portable instrument for detection of many toxic gases. This innovative unit offers these exclusive portable instrument features:

■ Logo Express® Service option for customized instruments
■ Standard MotionAlert™ feature to indicate "man-down"
■ Great impact durability
■ Excellent dust and water ingress protection
■ Multilingual at no extra cost
■ Standard graphical display
■ Optional high-resolution color display
■ Diffusion mode or internal pump
■ Rechargeable or alkaline battery options

Contact MSA for more details and for ordering information.

Watchman® Multigas Monitor

The Watchman Multigas Monitor is a durable, portable instrument used to detect and monitor combustible gases, oxygen, and toxic gases in workplace atmospheres, especially in confined spaces such as manholes, storage tanks, tank cars, vaults, mines, and sewers. Designed for rugged handling, the monitor incorporates the state-of-the-art technology in a strong aluminum housing. The Watchman Monitor is ideal for long jobs in heavy industrial environments, as the instrument will run up to 16 hours on a single charge.

For more complete information, see Data Sheet 08-02-39.

Approvals

The Watchman Multigas Monitor meets intrinsic safety testing requirements for use in Class I Division 1, Groups A, B, C and D; Class II Division 1, Groups E, F, G; and Class III hazardous locations.

Watchman Multigas Monitor Kits

	LEL Display	O₂	CO	H₂S	Peak	STEL/TWA/Tag	AC Charger	10ft Line	Probe	Water Stop	Line Trap	Part No.	Notes
Industrial 4-Gas	•	•	•	•	•		•	•	•		•	711132	
Industrial 4-Gas	•	•	•	•	•	•	•	•	•	•		711406	
Industrial 3-Gas	•	•	•		•	•	•	•	•	•		711407	Replaces Model 360
Industrial 3-Gas	•	•		•	•	•	•	•	•	•		711408	Replaces Model 361
Industrial 2-Gas	•	•			•	•	•	•	•	•		711409	Replaces Model 260

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Watchman Multigas Monitor, configured exactly the way you want it. You can choose from an extensive line of base instrument components and accessories. See the ATO chart on the following page to make your selections.

Watchman® Multigas Monitor Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.
- To calculate your instrument price, write in the price for each option in the space provided to the right and add to the base price of $1,339.88 below.

A. Electrochemical Sensor Configuration Options

Please list the code number for the toxic gas sensors desired in the spaces to the right. In order to properly process your order, list them in descending numerical order. Use zeros to complete any of the four selections where no sensor is desired (e.g. 2100). Add the price of each sensor to obtain the sensor sub-total pricing.

Sensors (Select 4)	Code	Selection
Sulfur Dioxide (0-100 ppm)	6	Toxic 1 ☐
Nitrogen Dioxide (0-100 ppm)	5	
Nitric Oxide (0-100 ppm)	4	
Hydrogen Sulfide (0-200 ppm)	3	Toxic 2 ☐
Carbon Monoxide (0-2000 ppm)	2	
Oxygen (0-25%)	1	Toxic 3 ☐
None	0	
		Toxic 4 ☐

B. Combustible Gas Sensor Options

If a combustible gas sensor is desired, select type of display. There are two options available: 0°100% Lower Explosive Limit (%LEL Pentane) or 0–5% Methane (%CH₄).

Sensors	Code	Selection
None	0	☐
0–100% LEL Pentane	L	
0–5% %CH₄ Methane	M	

C. Peak Page

Allows user to view the peak gas readings for the entire time the instrument is running. The user can access this page by pressing simply the "PAGE" button on the tester keypad.

Peak Display Page	Code	Selection
Not enabled	0	☐
Peak display enabled	1	

D. STEL Page

Enables page and alarms for 15-minute-weighted-average gas exposures. To enable the STEL page, enter a "1" in the box to the right, otherwise, enter a "0".

STEL Display Page	Code	Selection
Not enabled	0	☐
STEL display enabled	1	

E. TWA Page

Enables page and alarms for 8-hour-weighted-average gas exposures. To enable the TWA page, enter a "1" in the box to the right, otherwise, enter a "0".

TWA Display Page	Code	Selection
Not enabled	0	☐
TWA display enabled	1	

F. Datatagging Page

Allows user to enter a text "tag" using the keypad to denote a location or note with a time stamp. To enable the datatagging page, enter a "1" in the box to the right, otherwise, enter a "0".

Datatagging Entry Pages	Code	Selection
Not enabled	0	☐
Datatagging pages enabled	1	

G. Battery Charger Options

From wall adapters to vehicular chargers, you can recharge your batteries wherever you need. Once recharged, your Watchman monitor is ready to provide you with up to 15 hours of continuous gas monitoring.

Battery Charger	Code	Selection
None	0	☐
Vehicle, 8–24 VDC	1	
Single-unit 110V	2	
Single-unit 220V	3	
Five-unit, 110/220V	5	

H. Sampling Lines

The Watchman Monitor's sampling lines are of the highest quality materials guaranteed to not alter sample concentration. The heavy-duty synthetic rubber material is ideally suited to industrial applications where heat and chemical resistance are crucial to instrument performance. Screw fittings with O-Ring couplings at each end help reduce the possibility of leaks when the monitor is operating.

Sampling Lines	Code	Selection
None	0	☐
5-foot	1	
10-foot	2	
15-foot	3	
25-foot	4	
50-foot	5	

I. Sampling Probes

MSA's sampling probes are durable and easy to use. An assortment of probe types is available to suit your applications. You can select between heavy-duty nickel plated brass probes or phenolic plastic probes where electrical conductivity might be a concern.

Sampling Probes	Code	Selection
None	0	☐
18-inch plastic	1	
3-foot brass	2	
3-foot plastic	3	
4-foot solid brass	4	

J. Line Traps

The Watchman Monitor is offered with two types of sample line protection from water ingress: a water stop filter and a water trap. The convenient, easy-to-use in-line water stop filter is a membrane filter that will prevent liquids from being drawn into the instrument.
The water trap provides a water collection bulb with a stop to automatically cut off the pump flow when the bulb fills. The water trap provides a visual indication you are drawing water into your sampling lines.

Line Traps	Code	Selection
None	0	☐
Water Stop Assembly	1	
Line Trap Assembly	2	
Both	3	

K. Remote Alarms

The Watchman Monitor's remote alarms provide an additional level of audible and visual alerts to your gas monitoring program. Available in low- and high-sound output and with an optional 15-foot extension cable, the remote alarms ensure your team is notified in high-noise areas.

Remote Alarms	Code	Selection
None	0	☐
90-dB horn / 3-foot cable	1	
90-dB horn / 15-foot cable	2	
105-dB horn / 3-foot cable	3	
105-dB horn / 15-foot cable	4	

L. Packaging Options

You can further protect your Watchman Monitor with a high-strength, weatherproof carrying case. For ease of transport and handling, the premium case accommodates the instrument along with its sampling and calibration accessories. A simple-to-understand training videotape is included at no extra charge.

Packaging Options	Code	Selection
Standard Packaging	0	☐
Premium Field Case with compartments for calibration accessories and bonus training viseo	1	

Your Model Part Number

Please write in numbers from selections above in appropriate boxes.

Selection … A A A A   B C D E F   G   H I J   K   L

A-WTM- ☐☐☐☐ ☐☐☐☐☐ ☐ ☐☐☐ ☐ ☐

List sensors in descending numerical order.

Instrumentation

Multigas Instrument Accessories

Solaris and Solaris Alkaline Multigas Detector Accessories

Sensors	Part No.
Replacement CO Sensor	10046944
Replacement H$_2$S Sensor	10046945
Replacement 0$_2$ Sensor	10046946
Replacement Combustible Sensor	10046947

Carrying Cases	Part No.
Cordura Jacket (Orange)	10049053
Cordura Jacket (Black w/velcro jacket)	10054586
Cordura Jacket for Solaris Alkaline	10070855
Leather Case	10064766

Replacement Parts	Part No.
Calibration Cap	10044994
Horn Chamber Protective Insert	10046042
Horn Cap Repair Kit	10068059

Sampling Accessories	Part No.
Universal Pump Probe, UL Approval	10046528
Universal Pump Probe, MSHA Approval	10047595
Universal Pump Probe, CSA Approval	10055576
Solaris Aspirator Assembly	10050333

Datalogging	Part No.
Datalog Kit (Software / Infrared reader)	710946
Datalogging Software Only	710988

Operational Videos	Part No.
Solaris Overview - VHS	10049318
Solaris Overview - CD ROM	10049319
Replacement instruction manual, CD ROM	10048654
Replacement Instruction Manual, paper copy	10046201

Power Supply	Part No.
Charger Cradle Assembly	10048185
North American Power Supply	10047342
Global Power Supply	10047343
Vehicle Charger	10049410
Multi-unit Power Survey	10069498
Multi-unit Charge Station (no cradles)	10069856
Multi-unit Charge Station (with cradles)	10069857

Sirius Multigas Detector Accessories

Battery Packs	Part No.
Standard Rechargeable Lithium Ion Battery Pack	10050347
Lithium Ion Battery Charger, consists of power supply and charge adapter	10052512
Replaceable Alkaline Battery Pack	10049412
Replaceable Alkaline Battery Pack less door	10049098
Vehicle Charger (includes charge adapter)	10052513

Sampling Accessories	Part No.
Sampling Line w/Quick-Connect, 10-foot footolyurethane	10040665
Sampling Line with Quick-Connect, 25-foot polyurethane	10040664
Sampling Line with Quick-Connect, 10-foot teflon	10049058
Sampling Line with Quick-Connect, 25-foot teflon	10049057
Sampling Line with Quick-Connect, 3-ft polyurethane coiled	10040667
Probe, 1-foot	10042621
Probe, 3-foot	10042622
Probe, 8-inch	10040589

Protective Jackets, Boots and Carrying Attachments	Part No.
Black Rubber Boot (includes harness)	10052514
Cordura Jacket (includes harness)	10050122
Shoulder Harness only	474555
Retractable Carrying Line with Belt Clip	10050976
Wrist Harness	10051803

Long-Term Storage Kit	Part No.
Includes 4-Gas PID, Lithium Ion and Alkaline Battery Packs, Vehicle Charger, 10' sampling line w/1' probe, retractable carrying line w/belt clip, Cordura jacket & black boot, Econo-Cal kit, Data Link w/software, 4 replacement sensors & PID Lamp, lamp cleaning kit, standard lamp cover & case	10051176

Replacement Lamps and Sensors	Part No.
10.6 eV Lamp	10049692
9.8 eV Lamp	10052298
4 Sensor Kit (LEL, O$_2$, CO, H$_2$S)	10051717
Combustible Sensor (both LEL and CH$_4$)	10049808
Oxygen	10049806
Carbon Monoxide	10049804
Hydrogen Sulfide	10049805
Long-Term Storage Oxygen Sensor (hermetically sealed for 2-year storage)	10049807

Accessories	Part No.
Disposable Ionization Chamber	10047463
Lamp Cleaning Kit	10049691
Filter Replacement Kit with O rings and replacement dust filters	10049680
Standard Lamp Cover	10050841
Tamper-Proof Lamp Cover	10050750
Sirius Multigas Detector Screwdriver	636913
Sirius Multigas Detector Instructional CD Rom	10054667
Sirius Multigas Detector Instructional Video	10050856
Instruction Manual	10048887

Carrying Cases	Part No.
Standard Black Plastic Case	710948
Premium Black Field Case w/foam insert	10052515
Standard Red Plastic Case	10020541
Long-Term Storage Kit Case with labeled foam insert	10051539

MSA Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010

Orion and OrionPlus Multigas Detector Accessories

Battery Packs & Chargers	Part No.
Rechargeable NiMH	10031091
NiMH battery charger	10020551
Alkaline	10031092
Vehicle charger	10034276
Battery pack jack cover	10030910
Replacement Sensors	**Part No.**
Combustible	10024247
Oxygen	10025940
Carbon Monoxide	711306
Hydrogen Sulfide	711307
Sampling Accessories	**Part No.**
Sample line, 3-foot coiled	10018118
Sample line, 5-foot coiled	710465
Sample line, 10-foot	497333
Sample line, 15-foot	497334
Sample line, 25-foot	497335
Probe, 1-foot	800332
Probe, 3-foot	800333
Protective Jackets	**Part No.**
Orange Cordura	10020486
Black Leather	10020485
Belt Clips	**Part No.**
Swivel Belt Loop Kit	710962
Protective Boots	**Part No.**
Black Rubber	10022036
Red Rubber (for Fire Service)	10025665
Video	**Part No.**
Care and Use Video	10020489
Data Communication	**Part No.**
Orion Link Module	655505
Orion Plus Link Kit	10059058

Watchman Multigas Detector Accessories

Battery Packs	Part No.
Heavy Duty NiCad	814127
Battery Charging	**Part No.**
Standard 120 VAC	494716
Standard 220 VAC	495965
Vehicular, 8–24 VDC	710423
Five-unit Charger	801759
Datalogging	**Part No.**
Data docking modules	804679
Sampling Accessories	**Part No.**
Sample Line, 5-foot	011354
Sample Line, 10-foot	011955
Sample Line, 15-foot	011912
Sample Line, 25-foot	011913
Sample Line, 50-foot	011958
Probe, 18-inch Plastic	486934
Probe, 3-foot Brass	011961
Probe, 3-foot Plastic	073743
Probe, 4-foot Brass, barhole	011960
Water Stop Assembly	711257
Line Trap Assembly	710459
Replacement Sensors	**Part No.**
Combustible Sensor	478537
Oxygen Sensor	480566
Carbon Monoxide Sensor	636240
Hydrogen Sulfide Sensor	636241
Nitric Oxide Sensor	808350
Nitrogen Dioxide Sensor	807477
Sulfur Dioxide Sensor	807476
Remote Alarm	**Part No.**
90 dB Remote Alarm	800992
105 dB Remote Alarm	800991
15-foot Extension Cable	800365

Instrumentation

ALTAIR® Pro Single-Gas Detector

The ALTAIR Pro Single-Gas Detector has a wide range of features, including simple intuitive operation, small rugged design, and dependable technology that is there when you need it. These innovative toxic gas and oxygen detectors are based upon the design of the popular ALTAIR Single-Gas Detector, but with added features and functionality.

- Tough rubberized housing
- One-button operation
- Accurately measures the gas concentration or percent oxygen
- Displays information on a large, clear, backlit LCD.
- Superior dust and water protection (rated IP67 except O_2-R)
- Event-logging and data-logging
- Excellent impact resistance

- Versions available for CO, H_2S, O_2, NH_3, Cl_2, ClO_2, NO_2, SO_2, HCN and PH_3
- Great RFI performance
- Adjustable alarm set points are offered for LOW, HIGH, TWA and STEL
- Alarms are indicated by flashing LEDs, an audible alarm, and an internal vibrating alarm.
- Replaceable battery and sensor

The ALTAIR Pro Single-Gas Detector will provide worry-free performance and stand up to the roughest handling in even the toughest industrial environments. The sensors and battery can easily be replaced to keep the unit performing for years. The ALTAIR Pro Single-Gas Detector is designed and built with MSA's superior quality and is part of the MSA STELLAR® Series, which features a varied selection of single-gas and multigas instruments.

Some of the available ALTAIR Gas Detectors

ALTAIR Pro Single-Gas Detectors

Instrument Type	Part No.	Low Alarm	High Alarm	STEL	TWA
Oxygen (O_2)	10074137	19.50%	23.00%	N/A	N/A
Carbon Monoxide (CO)	10074135	25 ppm	100 ppm	100 ppm	25 ppm
Carbon Monoxide (CO) Fire	10076723	25 ppm	100 ppm	100 ppm	25 ppm
Carbon Monoxide (CO) Steel	10076724	75 ppm	200 ppm	200 ppm	75 ppm
Hydrogen Sulfide (H_2S)	10074136	10 ppm	15 ppm	15 ppm	10 ppm
Hydrogen Cyanide (HCN)	10076729	4.7 ppm	10 ppm	10 ppm	4.7 ppm
Chlorine (CL_2)	10076716	0.5 ppm	1.0 ppm	1.0 ppm	0.5 ppm
Chlorine Dioxide (CLO_2)	10076717	0.1 ppm	0.3 ppm	0.3 ppm	0.1 ppm
Sulfur Dioxide (SO_2)	10076736	2.0 ppm	5.0 ppm	5.0 ppm	2.0 ppm
Nitrogen Dioxide (NO_2)	10076731	2.0 ppm	5.0 ppm	5.0 ppm	2.0 ppm
Ammonia (NH_3)	10076730	25 ppm	50 ppm	35 ppm	25 ppm
Phosphine (PH_3)	10076735	0.3 ppm	1.0 ppm	1.0 ppm	0.3 ppm
Oxygen Remote (O_2-R)	10076733	19.50%	23.00%	N/A	N/A
Alternate Set Point Models	**Part No.**	**Low Alarm**	**High Alarm**	**STEL**	**TWA**
Oxygen (O_2)	10076732	18.00%	19.50%	N/A	N/A
Carbon Monoxide (CO)	10076718	30 ppm	60 ppm	60 ppm	30 ppm
Carbon Monoxide (CO)	10076719	35 ppm	100 ppm	100 ppm	35 ppm
Carbon Monoxide (CO)	10076720	35 ppm	400 ppm	400 ppm	35 ppm
Carbon Monoxide (CO)	10076721	50 ppm	200 ppm	200 ppm	50 ppm
Carbon Monoxide (CO)	10076722	100 ppm	300 ppm	300 ppm	100 ppm
Carbon Monoxide (CO) Steel	10080532	199 ppm	200 ppm	200 ppm	35 ppm
Hydrogen Sulfide (H_2S)	10076728	10 ppm	20 ppm	20 ppm	10 ppm
Hydrogen Sulfide (H_2S)	10076725	5 ppm	10 ppm	10 ppm	5 ppm
Hydrogen Sulfide (H_2S)	10076727	8 ppm	12 ppm	12 ppm	8 ppm
Hydrogen Sulfide (H_2S)	10076726	7 ppm	14 ppm	14 ppm	7 ppm

Accessories and Parts

467895	Regulator, 0.25 lpm	10041105	Cellphone clip
10030325	Tubing, 16" (do not use with NH_3, Cl_2, and ClO_2)	10041107	Lanyard clip
10080534	Tubing, 16" Teflon-lined (NH_3, Cl_2, and ClO_2)	10073346	Hardhat clip
10074132	3V CR2 battery	10040002	Clip, suspender (standard)
10069894	Clip, stainless steel	710946	FiveStar Link with IR

ALTAIR® Maintenance-Free Single-Gas Detector

The ALTAIR Single-Gas Detector features sensor options for carbon monoxide, hydrogen sulfide and oxygen and will operate for **over** two years maintenance free. This long lifespan, coupled with the unit's high performance, results in one of the most cost-effective single-gas detectors on the market. Advanced design offers superior dust and water protection and high resistance to RFI. Rubberized housing and one-button operation provide the durability and ease of use users expect from MSA instruments.

Alarm System

The triple-alarm system featuring two bright flashing LEDs, a piercing audible alarm, and a vibrating alarm ensures that no alarm condition goes unnoticed.
- 95 dB audible alarm (distinct sounds for High and Low alarms)
- Dual LEDs positioned to be seen from all angles
- Standard vibrating alarm and standard event logging

Durability Features
- Hard polycarbonate case, encapsulated in a thick rubberized shell
- Extremely resistant to drops and impacts
- Rated to IP67 protection levels for dust/water ingress

Warranty
Two years or 18 hours of alarm (1080 minutes)

Accessories and Parts

710882	Cylinder, 60 ppm CO
473180	Cylinder, 300 ppm CO
467897	Cylinder, 40 ppm H_2S, RP
711062	Cylinder, 40 ppm H_2S, Econo-Cal
467895	Regulator, 0.25 lpm
10040002	Clip, suspender (standard)
10069894	Clip, stainless steel
10041105	Cellphone clip
10041107	Lanyard kit
710946	FiveStar® Link® with IR (for event log)
10030325	Tubing, 16"
10073346	Hardhat clip

ALTAIR Single-Gas Detectors

Instrument Type	Part No.	Low Alarm	High Alarm
Carbon Monoxide (CO)	10070750	25 ppm	100 ppm
Hydrogen Sulfide (H_2S)	10070749	10 ppm	15 ppm
Oxygen (O_2)	10070791	19.5% Vol	23% Vol
Alternate Set Point Models	**Part No.**	**Low Alarm**	**High Alarm**
Carbon Monoxide (CO)	10071334	30 ppm	60 ppm
Carbon Monoxide (CO)	10071335	35 ppm	100 ppm
Carbon Monoxide (CO)	10071336	35 ppm	400 ppm
Carbon Monoxide (CO)	10071337	50 ppm	200 ppm
Carbon Monoxide (CO)	10071338	100 ppm	300 ppm
Hydrogen Sulfide (H_2S)	10071340	10 ppm	200 ppm
Hydrogen Sulfide (H_2S)	10071361	5 ppm	10 ppm
Hydrogen Sulfide (H_2S)	10071362	8 ppm	12 ppm
Hydrogen Sulfide (H_2S)	10071363	7 ppm	14 ppm
Oxygen (O_2)	10071364	19.5% Vol	18% Vol

ALTAIR® QuickCheck™ Station

- Fast, easy bump tests
- Maintenance free
- Checks instrument's visual, audible, and vibrating alarms
- Easy-to-understand LEDs show tests in progress and pass/fail status
- Compatible with most ALTAIR and ALTAIR Pro Detectors

Replacement and Accessory Parts

10047342	North American Power Supply
10049410	Vehicle Power Supply
10077384	Regulator Tubing
10077385	Front Housing Assembly
10075893	Automatic Gas Regulator
467895	Manual Regulator
710386	Single Cylinder Holder

ALTAIR® QuickCheck™ Station

Manual Regulator	Automatic Regulator	Gas Type
10076692	10076704	O_2/CO/H_2S/SO_2/NO_2
10076701	10076713	Cl_2/ClO_2
10076695	10076707	NH_3
10076698	10076710	HCN

Instrumentation

Combustible Gas Detectors

Titan® Combustible Gas Detector

The Titan Combustible Gas Detector is a hand-held instrument used for the detection of combustible gases and vapors in air. The unit is equipped with an 85 dB audible alarm and one of the biggest displays available. The intuitive one-button operation allows simplicity of use. Simply switch on, and the Titan warns you of the presence of dangerous levels of combustible gases or vapors. It will stand up to the roughest handling in even the toughest environments. And, it is part of the MSA Stellar series of portable gas detection instruments.

Gascope® Combustible Gas Indicators and Tankscope® Combustible Gas Indicator, Model 62T

Gascope Combustible Gas Indicators are portable instruments for use in detecting, measuring, and pinpointing leaks of combustible gases and vapors. Each unit is easily carried with integral neck and waist straps, leaving hands free for climbing, operating the instrument, or carrying additional equipment.

Three Gascope Combustible Gas Indicator models are available. The Model 60 is designed for use by gas utility companies in routine testing for methane-in-air concentrations in manholes, sewers, curb boxes, and other street openings. The Model 62S, also suitable for use by gas utility companies, is designed for reading 0–100% LEL methane-in-air and 0–100% by volume methane-in-air. The Model 62 is for general industrial use and is designed for reading 0–100% LEL pentane-in-air. For more complete information, see Data Sheet 08-01-04.

The Tankscope Combustible Gas Indicator, Model 62T, is a portable instrument specifically designed to detect combustible gas leaks in inerted shipboard oil holds. Based on the highly successful Gascope Combustible Gas Indicator, the portable Tankscope Indicator has an easy-to-read analog display and is very simple to use.

Approvals

Gascope Combustible Gas Indicators are listed by MET for use in Class I, Division 1, Groups C and D hazardous locations defined by the National Electric Code.

Explosimeter® Combustible Gas Indicator

The Explosimeter Combustible Gas Indicator detects and measures concentrations of combustible gases or vapors in the air. The instrument can be used in the immediate environment or, with sampling lines and probes, it can draw samples from remote areas. The unit is housed in a cast aluminum case. For more complete information, see Data Sheet 08-00-03.

Approvals

Model 2A is listed by Underwriters' Laboratories (UL) for use in hazardous locations as defined by the National Electrical Code. UL approval is for Class I, Group D, Divisions 1 and 2; and Class I, Groups A, B and C, Division 2 (Division 1 excluded), hazardous atmospheres.

Titan Combustible Gas Indicator

Gascope Combustible Gas Indicator

Explosimeter Combustible Gas Indicator

TITAN Combustible Gas Detector

	with alkaline batteries	with NiMH batteries	with vibrating battery pack
Pentane-calibrated	10033144	10033387	10033388
Methane-calibrated	10039414	10039415	10039416
Propane-calibrated	10042385	10042386	10042387
Accessories			**Part No.**
Battery charger and stand			10040783
Carrying case with strap			10035638
Model RP cylinder, pentane			804532
Model RP cylinder, methane			491041

Gascope/Tankscope Indicators

Complete with carrying straps and batteries, less sampling line.	
Utility Model 60	465475
Model 62	465681
Utility Model 62S	468410
Model 62T, Tankscope	711258

Explosimeter Combustible Gas Indicator

Comes complete with carrying straps, less sampling line.

Description	Applications	Part No.
Model 2A	General testing for combustible gases or vapors in the air	89220

Detector Tube Pumps

Toximeter™ II Automatic Detector Tube Pump

The Toximeter II Automatic Detector Tube Pump makes the sampling process easier, allowing the user to preset the number of pump strokes from 1 to 250. Intrinsically safe, the automatic pump works with all MSA detector tubes. It can also be used as a sampling pump.

Toximeter™ II Automatic Detector Tube Pump	
655585	Toximeter II Automatic Detector Tube Pump

Kwik-Draw® Detector Tube Pumps

MSA's Kwik-Draw and Kwik-Draw Deluxe Pumps can be used with an assortment of MSA's detector tubes to spot-test atmospheres for a wide variety of toxic substances. They are designed for one-hand operation and consistent delivery of a sample draw volume of 100 milliliters (ml).

Kwik-Draw Detector Tube Pumps	
488543	Kwik-Draw Basic Pump, with remote sampling adapter and carrying pouch
487500	Kwik-Draw Deluxe Pump, with remote sampling adapter, carrying pouch and end-of-stroke indicator
Accessories	
73067	Sampling line, 10 ft
73068	Sampling line, 25 ft
73069	Sampling line, 50 ft
87970	Remote Sampling Adapter, required for above sampling line
488780	Solvent-Resistant Sampling Line, 25 ft, with reel
488872	Tube Holder, required for 488780 line above
470321	Flue Gas Kit

Gas-Tester™ II H Detector Tube Pump

The Gas-Tester II H Pump is set for action by compressing the bellows. A pump stroke is started by pressing the release button. When the sample (100ml) is drawn through the tube, the end-of-stroke indicator changes color. An accurate measurement is obtained because the sample draw procedure itself is controlled only by the specifications of the pump and the flow resistance of the detector tube.

Gas-Tester II H Detector Tube Pump	
696944	Gas Tester II H Detector Tube Pump

Detector Tube Handbook

Detector Tube Handbook	
813929	Detector Tube Handbook

For more complete information on all Detector Tube Pumps, see Data Sheet 08-01-02.

Instrumentation

Detector Tube Industry Action Sets

Agricultural Set
4 x Phosphine
2 x Sulfur Dioxide
4 x Methyl Bromide
2 x Hydrogen Cyanide

Pulp & Paper Set
3 x Chlorine Dioxide
2 x Sulfur Dioxide
3 x Hydrogen Sulfide
2 x Chlorine
2 x Ozone

Indoor Air Quality Set
2 x Carbon Monoxide
2 x Carbon Dioxide
2 x Formaldehyde
2 x Ozone
2 x H_2O (relative humidity)

Pharmaceutical Set
3 x Acetic Acid
3 x Aromatic HC
3 x Qualitest
3 x Hydrogen Cyanide

Petroleum Set
2 x Hydrogen Sulfide
2 x Carbon Monoxide
2 x Qualitest
4 x Benzene
2 x Hexane

Mining Set
3 x Carbon Monoxide
2 x Nitrogen Dioxide
3 x Nitrous fumes
4 x Natural Gas/Methane

Synthetics Manufacturing Set
2 x Toluene
4 x Qualitest
2 x Ethanol
2 x Vinyl Chloride
2 x Trichloroethylene

Semiconductor Sets
Chemical Vapor Deposition Process
3 x Ammonia tubes
3 x CO_2 tubes
3 x Nitrous fumes tubes
3 x H_2S tubes

Etching Process
4 x Ammonia tubes
4 x Chlorine tubes
4 x Hydrogen Chloride tubes

Epitaxy Process
3 x CO tubes
3 x Hydrogen Chloride tubes
3 x Phosphine tubes
3 x Phosgene tubes

Crystal Growth Process
6 x Phosgene tubes
6 x Phosphine tubes

Note: All sets are boxes of 12 tubes.

Detector Tube Industry Action Sets	
Agricultural Set	655864
Pulp and Paper Set	655868
Indoor Air Quality Set	710981
Pharmaceutical Set	655869
Petroleum Set	655865
Mining Set	655867
Synthetics Manufacturing Set	655866
Chemical Vapor Deposition Process Set	655933
Etching Process Set	655934
Epitaxy Process Set	655935
Crystal Growth Process Set	655931

Chemical Warfare Agent Detector Tubes

Detect a wide range of nerve, blister, blood, and choking agents.
- Quick, simple to use, easy to interpret results
- "Go/No Go" style
- Can be used with MSA's full line of pumps
- All sold in boxes of 10 tubes
- Important: Sold only in the U.S.

Chemical Warfare Agent Detector Tubes	
10007654	Nerve (Sarin, VX, GA, GD, etc.)
10007653	Blister (Mustard Gas)
10007650	Blister (Lewisite)
10007652	Blister (variety, including Mustard Gas)
10007651	Blood and Choking (CG, DP, AC, CK)

Chemical Warfare Agent Detector Tube Kits

Chemical Warfare Kits are available in a Single CWA Tube Sampler and a Multi CWA Tube Sampler. The Single CWA Tube Sampler will only sample one CWA tube at a time. The Multi CWA Tube Sampler allows the user to simultaneously sample up to four CWA tubes at the same time without making adjustments. The kit is supplied with an MSA Escort ELF pump, which maintains constant flow with a built-in "Run/Hold" feature that allows the user to start/stop the pump and still maintain an accurate sampling timer. The four-port manifold tube holder is pre-set for the proper flow rate for CWA tube sampling.

Multi CWA Tube Sampler

Single CWA Tube Sampler

Chemical Warfare Agent Detector Tube Kits	
10049765	Multi CWA Tube Sampler with Escort ELF Pump
10044998	Single CWA Tube Sampler with Kwik-Draw Pump

Detector Tubes

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Acetaldehyde	Formaldehyde-0.1	497649	5–50	25 (ceiling)
Acetic Acid	Acetic Acid-1	804138	1–80	10
Acetone	Acetone-100	804141	100–10,000	500
	Qualitest QL	497665	n/a	
Acetylene dichloride, cis and trans (1,2 Dichloroethylene)	Trichloroethane-5	487343	10–500	200
	Qualitest QL	497665	n/a	
Acetylene tetrabromide (1,1,2,2-Tetrabromoethane)	Trichloroethane-5	487343	5–200	1
	Qualitest QL	497665	n/a	
Acetylene tetrachloride (1,1,2,2-Tetrachloroethane)	Trichloroethane-5	487343	50–1000	1
	Qualitest QL	497665	n/a	
Ammonia	NH3–2	804405	2–500	25
	NH3–20	800300	20–1000	
	NH3–0.1%	804406	0.1–10 Vol.-%	
n-Amyl chloride (1-Chloropentane)	Trichloroethane-5	487343	5–550	–
Benzene	Aromatic HC	804132	5–500	.5
	C6H6-1	807024	1–100	
	C6H6-5	804411	5–100	
	Qualitest QL	497665	n/a	
	C6H6-0.5	655837*	0.5–10	
Bromine	C12-0.2	803944	0.2–3	0.1
Bromobenzene	Aromatic HC	804132	30–720	–
Bromoethane (Ethyl bromide)	Trichloroethane-5	487343	15–400	5
Bromoform (Tribromomethane)	Trichloroethane-5	487343	7–200	0.5
Bromomethane (Methyl bromide)	Trichloroethane-5	487343	20–270	1
1,3-Butadiene	Ethylene-50	804428	100–1200	2
	Qualitest QL	497665	n/a	
n-Butane	Propane-200	804418	200–3800	800
	Qualitest QL	497665	n/a	
n-Butanol (Butyl Alcohol)	Ethanol-100	804136	100–3900	50 (ceiling)
sec. Butanol (sec-Butyl Alcohol)	Ethanol-100	804136	300–5100	100
1-Butene (1-Butylene)	Ethylene-50	804428	100–5000	–
	Qualitest QL	497665	n/a	
2-Butylene, cis and trans (2-Butylene)	Ethylene-50	804428	200–5000	–
	Qualitest QL	497665	n/a	
Butyl Alcohol (n-Butanol)	Ethanol-100	804136	100–3900	50 (ceiling)
sec-Butyl Alcohol (sec-Butanol)	Ethanol-100	804136	300–5100	100
n-Butylamine	Triethylamine-5	804134	2–28	5 (ceiling)
iso-Butylamine	Triethylamine-5	804134	3–36	–
sec-Butylamine	Triethylamine-5	804134	2–18	–
t-Butylamine	Triethylamine-5	804134	2–14	–
n-Butylchloride (1-Chlorobutane)	Trichloroethane-5	487343	5–170	–
	Qualitest QL	497665	n/a	
1-Butylene (1-Butene)	Ethylene-50	804428	100–5000	–
	Qualitest QL	497665	n/a	
2-Butylene (2-Butene, cis and trans)	Ethylene-50	804428	200–5000	–
	Qualitest QL	497665	n/a	
n-Butyl mercaptan	Ethylmercaptan-0.5	804589	1.5–15	0.5
t-Butyl mercaptan	Ethylmercaptan-0.5	804589	0.8–5	–
Carbon Dioxide	CO2-100	497606	100–3000	5000
	CO2-0.1%	487333	0.1–7.0 Vol.-%	
	CO2-1%	804419	1–20 Vol.-%	
Carbon Disulfide	CS2-2	492514	2–300	10
	Qualitest QL	497665	n/a	
Carbon Monoxide	CO-0.001 %	804421	0.001–0.3 Vol.-%	25
	CO-5	803943	5–1000	
	CO-10	487334	10–3000	
	CO-3000	815507	3000–70000	
	CO-0.1%	804423	0.1–1.0 Vol.-%	
	CO-0.3%	487335	0.3–7.0 Vol.-%	
	CO-10/color	47134	10–1000	
	(special orifice assembly for CO-10/color)	497652		
	Qualitest QL	497665	n/a	
Chlorine	Cl2-0.2	803944	0.2–30	0.5
	ClO2-0.05	804133	1–46	
	Cl2-50	655862	50–500	

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Chlorine dioxide	ClO2-0.05	804133	0.05–15	0.1
Chlorobenzene	Aromatic HC	804132	40–610	10
Chlorobromomethane	Trichloroethane-5	487343	5–180	200
1-Chlorobutane (n-Butylchloride)	Trichloroethane-5	487343	5–170	–
	Qualitest QL	497665	n/a	
Chloroethane(Ethyl chloride)	Trichloroethane-5	487343	50–800	100
Chloroethylene (Vinyl chloride)	VC-1	803950	1–70	5
	Trichloroethane-5	487343	20–550	
Chloroform (Trichloromethane)	Trichloroethane-5	487343	8–100	10
1-Chloropentane (n-Amylchloride)	Trichloroethane-5	487343	5–550	–
1-Chloropropane (l-Propylchloride)	Trichloroethane-5	487343	5–220	–
2-Chloropropane (2-Propylchloride)	Trichloroethane-5	487343	8–1700	–
Cycloheptane	Hexane-20	497664	80–3300	–
Cyclohexane	Hexane-20	497664	20–3400	300
	Qualitest QL	497665	n/a	
Cyclohexylamine	Triethylamine-5	804134	7–38	10
Cyclooctane	Hexane-20	497664	20–2100	–
Cyclopentane	Hexane-20	497664	80–2700	600
n-Decane	Hexane-20	497664	50–500	–
1,2-Dibromoethane (Ethylene dibromide)	Trichloroethane-5	487343	25–700	–
Dibromomethane (Methylene dibromide)	Trichloroethane-5	487343	9–200	–
1,1-Dichloroethane (Ethylidene chloride)	Trichloroethane-5	487343	8–300	100
1,2-Dichloroethane (Ethylene dichloride)	CH_2Cl_2-50	804416	30–720	10
1,1-Dichloroethylene (Vinylidene chloride)	Trichloroethane-5	487343	10–600	5
1,2-Dichloroethylene (Acetylene dichloride, cis and trans)	Trichloroethane-5	487343	10–500	200
Dichloromethane (Methylene chloride)	CH_2Cl_2-50	804416	50–1000	50
1,2-Dichloropropane (Propylene dichloride)	Trichloroethane-5	487343	5–440	75
1,3-Dichloropropane (Trimethylene dichloride)	Trichloroethane-5	487343	5–220	–
Diesel Oil	Qualitest QL	497665	n/a	
Diethylamine	Triethylamine-5	804134	3–27	5
Dimethylamine	Triethylamine-5	804134	3–27	5
2,2-Dimethylbutane	Hexane-20	497664	100–4900	–
Ethanol (Ethyl Alcohol)	Ethanol-100	804136	100–6000	1000
	Qualitest QL	497665	n/a	
Ethene (Ethylene)	Ethylene-50	804428	50–5000	–
	Qualitest QL	497665	n/a	
Ethyl Alcohol (Ethanol)	Ethanol-100	804136	100–6000	1000
	Qualitest QL	497665	n/a	
Ethylamine	Triethylamine-5	804134	4–55	5
Ethyl benzene	Tol.-5	803947	5–1800	100
Ethyl bromide (Bromoethane)	Trichloroethane-5	487343	15–400	5
Ethyl chloride (Chloroethane)	Trichloroethane-5	487343	50–8000	100
Ethylenediamine	Triethylamine-5	804134	5–27	10
Ethylene dibromide (1,2-Dibromoethane)	Trichloroethane-5	487343	25–700	–
Ethylene dichloride (1,2-Dichloroethane)	CH_2Cl_2-50	804416	30–720	10
Ethylidene chloride (1,1-Dichloroethane)	Trichloroethane-5	487343	8–300	100
Ethyl mercaptan	Ethylmercaptan-0.5	804589	0.5–80	0.5
Formaldehyde	Formaldehyde-0.1	497649	0.1–55	0.3 (ceiling)
Formic Acid	Qualitest QL	497665	n/a	5
	Acetic Acid-1	804138	2–160	
Furfuryl alcohol	Phenol-1	813778	on request	10
Gasoline	Gasoline-30	492870	30–6000	300
	Qualitest QL	497665	n/a	
n-Heptane	Hexane-20	497664	20–2600	400
n-Hexane	Hexane-20	497664	20–3200	50
Hydrogen Chloride	HCl-1	803948	1–30	5 (ceiling)
	Qualitest QL	497665	n/a	
Hydrogen Cyanide	HCN-2	803945	2–50	4.7 (ceiling)
Hydrogen Fluoride	HF-1	804142	1–50	3 (ceiling)

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Hydrogen Sulfide	H_2S-1	487339	1–200	10
	H_2S-100	487340	0100–4000	
	H_2S-0.1%	655932	0.1–4 Vol. %	
	Qualitest QL	497665	n/a	
Isobutane (Methylpropane)	Propane-200	804418	200–4200	–
Isobutanol (Isobutyl Alcohol, 2-Methylpropyl Alcohol)	Ethanol-100	804136	100–2900	50
Isobutene (Isobutylene, Methylpropene)	Ethylene-50	804428	400–2600	–
Iso-Butylamine	Triethylamine-5	804134	3–36	–
Isobutylene (Isobutene, Methylpropene)	Ethylene-50	804428	400–2600	–
Isobutyl Alcohol (Isobutanol, 2-Methylpropyl Alcohol)	Ethanol-100	804136	150–2900	50
Isobutyl Methyl Ketone	MEK-50	813334	50–6500	–
Iso Octane	Hexane-20	497664	100–3000	–
Isopropanol (Isopropyl Alcohol, 2-Propanol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Isopropyl Alcohol (Isopropanol, 2-Propanol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Isopropylamine	Triethylamine-5	804134	5–30	5
Isopropyl mercaptan	Ethylmercaptan-0.5	804589	0.5–5.5	–
Kerosene	Qualitest QL	497665	n/a	–
Ketones	Qualitest QL	497665	n/a	–
Liquified Petroleum Gases	Gasoline-30	492870	Semiquantitative	–
	Qualitest QL	497665	n/a	
Mercury	Hg–0.1 mg/m^3	497663	0.1–0.8 mg/m^3 (0.01–0.08 ppm)	0.025 mg/m^3 (inorganic)
Methane	Natural Gas	655789	Semiquant. 5000+	–
Methanol (Methyl Alcoho1)	Ethanol-100	804136	100–2350	200
Methyl Alcohol (Methanol)	Ethanol-100	804136	100–2350	200
Methylamine	Triethylamine-5	804134	4–55	5
Methyl benzene (Toluene)	Tol.-5	803947	5–1000	50
Methyl bromide (Bromomethane)	Trichloroethane-5	487343	9–200	5
	MeBr-200	710544	200–8000 ppm	
	MeBr-2	710391	2–100 ppm	
2-Methyl butane	Hexane-20	497664	50–3000	–
Methyl chloroform (1,1,1-Trichloroethane)	Trichloroethane-5	487343	5–1500	350
	Qualitest QL	497665	n/a	
Methylcyclohexane	Hexane-20	497664	80–4900	400
Methylcyclopentane	Hexane-20	497664	150–3700	–
Methylene chloride (Dichloromethane)	CH_2Cl_2-50	804416	50–1000	50
Methylene dibromide (Dibromomethane)	Trichloroethane-5	487343	9–200	–
Methyl Ethyl Ketone (MEK)	MEK-50	813334	50–4000	200
	Qualitest QL	497665	n/a	
Methyl mercaptan	Ethylmercaptan-0.5	804589	0.5–5	0.5
2-Methyl pentane	Hexane-20	497664	150–4500	–
3-Methyl pentane	Hexane-20	497664	100–3700	–
Methylpropane (Isobutane)	Propane-200	804418	200–4200	–
Methylpropene (Isobutylene, Isobutene)	Ethylene-50	804428	400–2600	–
2-Methylpropyl Alcohol (Isobutanol, Isobutyl Alcohol)	Ethanol-100	804136	150–2900	50
Nitrogen Dioxide	NO_2-0.5	487341	0.5–50	3
	NO_2-2	804435	2–140	
Nitrous Fumes	Nitr.-0.5	487336	0.5–50	–
	Nitr.-2	804425	2–140	
	Nitr.-10	803946	10–300	
	Nitr.-50	804426	50–3000	
n-Nonane	Hexane-20	497664	50–2800	200
n-Octane	Hexane-20	497664	50–3000	300
Ozone	Ozone-0.05	804140	0.05–5	0.05 (ceiling)
Pentachloroethane	Trichloroethane-5	487343	10–300	–
n-Pentane	Hexane-20	497664	50–3900	600
	Qualitest QL	497665	n/a	

Substance Measured	Detector Tube applicable	Part No. (1 box of 10 tubes)	Measuring range (ppm)	Threshold Limit Value 1998 ACGIH (ppm)
Perchloroethylene (Tetrachloroethylene)	Per-5	804429	5–200	25
	Per-10	487337	10–500	
	Qualitest QL	497665	n/a	
Phenol	Phenol-1	813778	1–25	5
	Qualitest QL	497665	n/a	
Phosgene	Phosgene-0.1	803949	0.1–20	0.1
Phosphine	PH$_3$-0.05	497101	0.05–3	0.3
	PH$_3$-0 1	485680	0.1–100	
	PH$_3$-50	489119	50–2000	
Propane	Propane-200	804418	200–4000	2500
	Qualitest QL	497665	n/a	
n-Propanol (Propyl Alcohol)	Ethanol-100	804136	100–3000	200
	Qualitest QL	497665	n/a	
2-Propanol (Isopropanol, Isopropyl Alcohol)	Ethanol-100	804136	200–5000	400
	Qualitest QL	497665	n/a	
Propene (Propylene)	Ethylene-50	804428	20–5000	–
	Qualitest QL	497665	n/a	
Propyl Alcohol (n-Propanol)	Ethanol-100	804136	100-3000	200
	Qualitest QL	497665	n/a	
n-Propylamine	Triethylamine-5	804134	2–28	–
1-Propylchloride (1-Chloropropane)	Trichloroethane-5	487343	5–220	–
2-Propylchloride (2-Chloropropane)	Trichloroethane-5	487343	8–1700	–
Propylene (Propene)	Ethylene-50	804428	20–5000	–
	Qualitest QL	497665	n/a	
Propylene dichloride (1,2-Dichloropropane)	Trichloroethane-5	487343	5–440	75
n-Propyl mercaptan	Ethylmercaptan-0.5	804589	0.7–8.0	–
Styrene	Styrene-10	804135	10–300	20
	Qualitest QL	497665	n/a	
Sulfur Dioxide	SO$_2$-1	487338	0.5–25	2
	SO$_2$-5	497662	5–120	
	SO$_2$-100	497661	100–4000	
Sulfur Hexaflouride decomposition products	SF$_6$ Decomposition Products	804433	0.5–15	1000
1,1,2,2-Tetrabromoethane (Acetylene tetrabromide)	Trichloroethane-5	487343	5–200	1
1,1,2,2-Tetrachloroethane	Trichloroethane-5	487343	50–1000	1
Tetrachloroethylene (Perchloroethylene)	Per-5	804429	5–200	25
	Per-10	487337	10–500	
	Qualitest QL	497665	n/a	
Tetrahydrofuran	Ethanol-100	804136	Semi-quant	200
Toluene (Methyl benzene)	Tol.-5	803947	5–1000	50
	Qualitest QL	497665	n/a	
Tribromomethane (Bromoform)	Trichloroethane-5	487343	7–200	0.5
1,1,1-Trichloroethane (Methyl chloroform)	Trichloroethane-5	487343	5–1500	350
	Qualitest QL	497665	n/a	
1,1,2-Trichloroethane (Vinyltrichloride)	Trichloroethane-5	487343	10–170	10
Trichloroethene (Trichloroethylene)	Tri-5	487342	5–250	50
Trichloroethylene (Trichloroethene)	Tri-5	487342	5–250	50
Trichloromethane (Chloroform)	Trichloroethane-5	487343	8–100	10
1,2,3-Trichloropropane	Trichloroethane-5	487343	10–1200	10
Triethylamine	Triethylamine-5	804134	5–30	1
Trimethylamine	Triethylamine-5	804134	5–30	5
Trimethylene dichloride (1,3-Dichloropropane)	Trichloroethane-5	487343	5–220	–
2,2,4-Trimethylpentane	Hexane-20	497664	100–3000	–
Vinyl Chloride (Chloroethylene)	VC-1	803950	1–70	5
	Qualitest QL	497665	n/a	
Vinylidene chloride (1,1-Dichloroethylene)	Trichloroethane-5	487343	10–600	5
Vinyltrichloride (1,1,2-Trichloroethane)	Trichloroethane-5	487343	10–170	10
Water Vapor	H$_2$O-10	655863	10–100% RH	–
0-Xylene (1,2-Xylene)	Tol.-5	803947	5–2500	100
	Qualitest QL	497665	n/a	
m-Xylene (1,3-Xylene)	Tol.-5	803947	5–2500	100

HAZMATCAD™ and HAZMATCAD Plus Hazardous Material Chemical Agent Detectors

HAZMATCAD Detector

The HAZMATCAD Hazardous Material Chemical Agent Detector is a handheld instrument that detects and classifies Chemical Warfare Agents (CWA). When compared to other technologies, the HAZMATCAD Detector offers more capabilities and greater reliability at a lower cost.

Features
- Compact, light-weight and portable
- Self-diagnostic check during rapid warm-up
- Alphanumeric display with LED alarms
- Dual-Mode SAW Operation—Fast or High Sensitivity
- Operates between 8 and 12 hours on rechargeable Li-Ion batteries
- Vapor-diffusion check source verifies system performance
- Unit can be hand-carried or worn on belt
- RS-232 and IrDA communication ports; stores up to 8 hours of data
- Inlet design protects against dust and particulates

HAZMATCAD Plus Detector

The HAZMATCAD Plus Detector detects for Chemical Warfare Agents (CWA) and selected Toxic Industrial Chemicals (TICs). It is a portable instrument designed for one-hand operation. It is very easy to operate and requires limited training for effective use.

Features
- Self-diagnostic check during rapid warm-up
- Alphanumeric display with LED alarms
- Dual-Mode SAW Operation – Fast or High Sensitivity
- Electrochemical Cells – Real time analysis
- Operates between 8 and 12 hours on rechargeable Li-Ion batteries
- Vapor-diffusion check source verifies system performance
- RS-232 and IrDA communication ports; stores up to 8 hours of data
- Inlet design protects against dust and particulates

HAZMATCAD Detector Kits

Kits include: HAZMATCAD Detector; battery charger; belt clip; two Sony rechargeable batteries; hard, water-resistant carrying case; operating manual; vapor check source

Part No.	Instrument	Chemical Agents Detected
10055094	HAZMATCAD Detector	Nerve and Blister
10055095	HAZMATCAD Detector	Nerve, Blister and Hydrogen Cyanide
10055096	HAZMATCAD Detector	Nerve, Blister and Phosgene
10055097	HAZMATCAD Plus Detector	Nerve and Blister agents and TICs (phosgene, hydrogen cyanide, halogen and hydride gas)

HazMat Response Kit

The HazMat Response Detector Tube Kit can be used by firefighters, HazMat Response Teams and other workers to help classify unknown chemical gases and vapors at accident or spill sites. A Quad-Port Sampler allows four chemical classes to be tested simultaneously. The portable kit contains 12 types of Detector Tubes (each with sufficient tubes for 10 complete tests), a Kwik-Draw Pump to draw the sample through the tubes, the multiple tube holder and a convenient, easy-to-follow interpretation guide.

Features & Benefits
- Quickly classifies unknown chemical gases and vapors
- Quad-Port Sampler allows simultaneous testing with four detector tubes, meaning less time in IDLH atmosphere
- Flow-limiting orifices ensure even sample flow
- Portable and easy to handle
- Includes simple interpretation guide

HazMat Response Kit

807472	Includes 12 types of detector tubes, multiple tube holder, Kwik-Draw Pump and interpretation guide
485233	Extra Quad-Port Sampler

SafeSite® Multi-Threat Detection System

The SAFESITE Multi-Threat Detection System simultaneously monitors and wirelessly communicates six potential threats: CWAs, VOCs, TICs, gamma radiation, combustible gas and oxygen deficiency.

The SAFESITE System combines state-of-the-art detection technology with advanced wireless communication capabilities to provide superior preventative and counter-measure solutions for:

- Homeland Security
- Emergency Response
- Public Events
- Building Protection
- Mass Transportation Centers
- Perimeter Monitoring
- Hazardous Response
- Port Surveillance
- Confined Space Monitoring

SAFECOM Command Center

PC Connection

SAFEMTX Multi-Threat Detector

SAFESITE System components consist of the SAFEMTX™ Multi-Threat Detector, the SAFECOM™ Command Center and the SAFECONNECT™ Belt-Bridge with Sirius wireless interface. The system can be installed permanently (wired or wireless) for continual monitoring or deployed as a portable system.

The SAFEMTX Multi-Threat Detector utilizes multi-sensing technologies to detect up to six potential threats; helping first responders, law enforcement and government agents reduce the risk of exposure and facilitate consequence management.

The SAFECOM™ Command Center receives mission-critical information from the SAFEMTX™ Detectors and permits this crucial and wide-ranging data to be converted quickly into practical information for rapid decision-making through an uncomplicated graphical user interface. The SAFECOM Command Center can manage up to four systems with 16 SAFEMTX Detectors per system, integrating SAFEMTX data, including:

- Gas readings
- Relative CWA threat level
- Radiation dose rate
- Alarm status
- GPS location
- Battery run time
- RF signal strength
- Fault conditions
- SAFEMTX min, max, and average values

Through the SAFECOM Command Center, alarms are identified with both visual and audible alarms. Alarms can then be acknowledged and silenced, detectors can be enabled and disabled, event logs and event log history can be viewed, plus units can be customized to suit the specific deployment scenario.

Wireless Technology

The SAFESITE® System provides up to two miles of wireless communication between any SAFEMTX Detector, SAFECONNECT Belt-Bridge and SAFECOM Command Center. SAFECONFIG™ Software works with the SAFECOM Command Center or SAFECONNECT Belt-Bridge, enabling configuration of any SAFEMTX Detector as a repeater. This added capability maximizes deployment range and ensures maximum signal strength and reliable deployment without the need to move units.

SAFEPAC™ Perimeter Area Command Kit

SAFESITE® SAFEPAC Perimeter Area Command Kit provides a basic kit for quick deployment and monitoring of an event or a location. The kit includes two Pelican cases with an internal battery charger, 4 SAFEMTX™ Multi-Threat Detectors, 1 SAFECOM™ Command Center, all necessary PC interface software, and 4 extra batteries. A laptop PC is also available as an option, or an existing PC can be used.

The SAFESITE Multi-Threat Detection System can be ordered using MSA's Assemble-To-Order System. Please refer to Bulletins 07-2114-MC and 07-2115-MC.

1 Threat Readings – scrolling readings of up to 16 MTX Detectors per channel. Unit is identified by large iconto the left of the readings. In alarm condition, display snaps to unit in alarm.

2 MTX Icons – identify number of units enabled in current network. Users may view specific unit reading by double-clicking on icon.

3 Map – option for map view or uploaded image view.

4 Signal Strength – communication status from SAFEMTX™ Detector to SAFECOM™ Command Center.

5 Power – status of battery life of SAFEMTX Detecors.

6 System Status – alerts user to alarm, warning or fault within a particular system.

7 Action Buttons – allow user to select address, cycle units, acknowledge alarms and enable or disable units from the system.

Threat	Technology	Benefit
Chemical warfare agents	Surface acoustic wave (SAW)	Low false positives and false alarms, differentiates nerve & blister agents
Gamma radiation	Cadmium zinc telluride (CZT)	Sensitive with adjustable threshold and 2 ranges. (0-100 mR/hr, 0.1 mR/hr resolution & 0-1000 mR/hr, 1 mR/hr resolution)
Volatile organic compounds	Photo-ionization (PID)	10.6 eV lamp provides ppm readings for broadband toxics and VOC detection
Toxic industrial chemicals	Electrochemical	Detects many specific toxic gases such as chlorine, ammonia, hydrogen cyanide and hydrogen chloride
Oxygen deficiency/ enrichment	Electrochemical	Oxygen monitoring for confined space
Combustible gas	Catalytic bead	Wide range detection for hydrocarbons

BIOSENSOR™ 2200R Biological Agent Detector

The new BIOSENSOR 2200R Biological Agent Detector from MSA is a handheld, portable, on-site instrument for rapid detection, analysis, and identification of biological agents. Unique bioassay technology offers excellent sensitivity and low false positives while offering ease of use during white powder response calls. This highly accurate detection method provides rapid measurement of biohazards such as anthrax, ricin, botulism, SEB, and plague.

Exclusive five minute time-to-answer allows first responders to make informed critical decisions more rapidly than any other biological agent detector. The BIOSENSOR 2200R employs dynamic surface generation, a patent pending type of immunoassay detection technology. This technology offers significant advantages over other field-based assay methods by combining the benefits of both the free solution and lateral flow types. The result is more rapid analysis, a user-friendly format, and detector stability within a wide range of climates.

Both wet and dry samples may be tested and results are displayed with a simple red (target present) or green (no target present) indication. As tests are nondestructive, samples may be retained as evidence. Single-test, disposable cartridges with on-board reagents have a 12-month shelf life. This instrument is permanently housed in a sturdy, lightweight Pelican case.

Instrument Features and Benefits

- 5 minute time-to-answer
- Uses positive and negative control cartridges
- Battery-operated with ability to run 50 tests on a single charge
- Fully deconable housing; IP67 rated
- Visual and audible alarms provide clear indication of status
- Extremely easy to use with a training time of one hour
- Integrated RFID (radio frequency identification) for automatic cartridge recognition

Targets

- Anthrax/ricin duplex—one test, two agents
- Anthrax
- Ricin
- SEB (staphylococcal enterotoxin B)
- Botulism*
- Plague*
- Smallpox*
- Tularemia*
- Cholera*
- West Nile virus*

*additional agents in development

BIOSENSOR 2200R Biological Agent Detector	
10084834	MSA BIOSENSOR 2200R Biological Agent Detector Kit*, includes carry case, charger, cartridge starter kit (10084758), instruction manual, and quick start guide.
BIOSENSOR Cartridge Plans	
10084758	MSA BIOSENSOR cartridge starter kit includes 3 Anthrax/Ricin dual kits**, 1 Anthrax, 1 Ricin, 3 positive control, 2 negative control cartridges, and 2 wet sample kits
10084753	MSA BIOSENSOR Low volume cartridge plan includes 6 Anthrax/Ricin dual kits**, 2 Anthrax, 2 Ricin, 6 positive control, 2 negative control cartridges, and 2 wet sample kits
10084754	MSA BIOSENSOR Medium volume cartridge plan includes 24 Anthrax/Ricin dual kits**, 6 Anthrax, 6 Ricin, 24 positive control, 6 negative control cartridges, and 4 wet sample kits
10084755	MSA BIOSENSOR High volume cartridge plan includes 60 Anthrax/Ricin dual kits**, 8 Anthrax, 8 Ricin, 60 positive control, 8 negative control cartridges, and 6 wet sample kits.

* Extended warranties available.

** Each biohazard cartridge test kit includes a dry sample kit. Please contact your local MSA rep for more information.

Escort ELF® and Escort® LC Sampling Pumps

Escort ELF Sampling Pumps

The patented Escort ELF Sampling Pump can be used for personal and area sampling. The state-of-the-art electronic laminar flow sensor, consisting of a laminar flow element and pressure sensor, provides constant flow (volume) control, with ± 2.5% regulation of flow rate (from 1 to 3 lpm) and automatic compensation for changes in battery voltage, temperature, altitude, and sample load.

An internal secondary standard calibrates the pump continuously and needs to be checked against a primary standard only once a month (or every 200 hours for coal mine dust sampling).

Approvals

Escort ELF Sampling Pumps are UL approved as intrinsically safe for use in hazardous locations—Class 1, Groups A, B, C, D; Class II, Groups E, F, and G; and Class III, Division I locations. NIOSH-certified for coal mine dust sampling (TC-74-030). MSHA certified as intrinsically safe for underground use (Approval No. 2G-3924-1).

Escort LC Sampling Pumps

The Escort LC Sampling Pump can be used with a variety of personal and area sampling devices to collect such airborne contaminants as asbestos fibers, toxic gases, vapors, particulates, fumes, and mists. It can also be used to sample silica dust, coal dust, and organic vapors.

The Escort pump is exceptionally compact, lightweight, and quiet in operation. Engineered for use in "hostile" environments, the unit can be sprayed with water while it is operating without being damaged.

Approvals

Escort LC Sampling Pumps are UL approved as intrinsically safe for use in hazardous locations—Class I, Groups A, B, C, D; Class II, Groups E, F, and G; and Class III, Division I locations.

MSA Sampling Pump Accessories

MSA sampling pump accessories and air sampling equiment allow monitoring of many different contaminants in various applications. Sampling pump accessories can be used in personal and area sampling for a wide variety of airborne contaminants such as asbestos fibers, toxic gases, vapors, particulates, mists, and fumes.

Accessories for MSA sampling pumps include filter media, a cyclone assembly, preweighed filter cassettes, filter holder assemblies, impingers, the Gemini® Twin-Port Sampler, sorbent tubes, and calibrators.

For more information, see Data Sheet 08-09-01.

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom-order" Escort Pumps, configured exactly the way you want them.

You can choose from an extensive line of base instrument components and accessories. See the ATO Chart on the following page.

To obtain a copy of the ATO via FAX, call MSA QuickLit Information Service at 1-800-672-9010. At the prompt, request QuickLit Document #2346 (ATO for Escort and Escort ELF and Escort LC Sampling Pumps).

Escort ELF® Sampling Pump

Escort® LC Sampling Pump

Battery Chargers

Sampling Equipment

Leather Jacket

Escort ELF and LC Kits

Escort ELF Pump with flow fault indicator, 110V single-unit charger, Gemini® Twin Port Sampler, and standard packaging	805559
Escort ELF Pump with flow fault indicator, 110V single-unit charger, sampling line, and standard packaging	805560
Escort LC Pump with 110V single-unit charger, sampling line and standard packaging	711400
Replacement Parts and Accessories	
Battery Pack with O-ring	497702
One Replacement Inlet Water Stop Filter	802897
Escort Pump Overhaul Kit—common components for routine maintenance	802922
Inlet Dust Filter (pkg of 5)	808935
Battery Chargers—MSA Omega® Chargers	
120 VAC 50/60 Hz	494716
220 VAC 50/60 Hz	495965
120/240 VAC 50/60 Hz (five-unit)	801759
Sampling Equipment	
Sampling line only	456226
10mm Cyclone Assembly to separate respirable dust from non-respirable dust	456243
Gemini Twin-Port Sampler for sorbent tubes	497697
10mm Cyclone Assembly to separate respirable dust from non-respirable dust, for use with 37 mm non-MSA cassettes	10044015
Carrying Accessories—Jacket	
Leather jacket	811741

Escort ELF® and Escort® LC Sampling Pump Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

			Code	Selection
A. **Number of Pumps**	It's your choice: You can order one pump at a time, or the convenient "5-Pump Kit," which includes a durable PVC carrying case and bonus training video. NOTE: When you order the 5-Pump Kit through this ATO Ordering Selection Matrix, any accessories (such as single-unit chargers, Gemini Twin-Port Samplers, cyclones or instrument jackets) you order will also be provided in five-packs.	**Number of Pumps** One Five	1 5	
B. **Pump Type**	No matter whether you choose the Single-Pump Option or the 5-Pump Kit Option in Section A, you have a choice of three different types of pumps: •The Escort ELF Pump with 90-second Flow-Fault Indicator. In the event that a flow blockage occurs, the Flow-Fault Indicator circuitry illuminates an LED to alert the user. Within 90 seconds, the pump automatically shuts off, but the cumulative elapsed time remains on the display. To select this option, write "ELF1" in the box at right. • The Escort ELF Pump without Flow-Fault Indicator. To select this option, write "ELF2" in the box at right. • The Escort LC Pump. To select this option, mark "ESLC" at right.	**Pump Type** Escort ELF Pump with 90-second Flow-Fault Indicator Escort ELF Pump without 90-second Flow-Fault Indicator Escort LC Pump	ELF1 ELF2 ELFLC	
C. **Battery Chargers**	Which type of battery charger do you want? Select from the following choices and mark your selection in the box at right (all operate from 50/60 Hz): "0" for no battery charger, "1" for 120-Volt charger, "2" for 220-Volt charger, or "5" for the 5-Unit charger.	**Battery Chargers** No battery charger 120-Volt charger 50/60 Hz 220-Volt charger 50/60 Hz 5-Unit charger 120/240 V, 50/60 Hz	0 1 2 5	
D. **Sampling Accessories**	Sampling Accessories include the following: • Sample Line • 10 mm Cyclone Assembly, which separates respirable dust particles from non-respirable particles • The Gemini® Twin-Port Sampler, which streamlines sampling with sorbent tubes by enabling collection of two or more samples simultaneously from a single sampling pump.	**Sampling Accessories** Sample Line only 10 mm Cyclone Assembly* (P/N 456243) Gemini Twin-Port Sampler No Sampling Line 10 mm Cyclone Assembly IH* (P/N 10044015)	1 2 3 4 5	
E. **Protective Jackets**	A protective leather jacket is offered as an option to protect the instrument from everyday wear, tear and scuff marks. To select the jacket, mark "1" in the box at right.	**Protective Leather Jacket** None Protective Leather Jacket for Sampling Pump	0 1	

Your Model Part Number — Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection …   **A**   **B**   **C**   **D**   **E**

A-PMP- [ ] – [   ] – [ ] – [ ] – [ ]

* Cyclone Assembly 456243 is for use with MSA pre-weighed cassettes (MSHA);
Cyclone Assembly 10044015 is for use with non-MSA cassettes.

42 CFR Oil-Mist Sampling Kits

The NIOSH respirator certification standard, 42 CFR Part 84, has introduced new ways to select non-powered air-purifying particulate filter respirators. One of the primary concerns of the standard is oil-mist exposure. According to this NIOSH standard, there are 3 levels of respiratory protection: N = Not resistant to oil; R = Resistant to oil; P = Oil-Proof. But how do you know whether oil mist is present in the workplace? MSA's 42 CFR Sampling Pump Kits can help you answer this question by providing convenience and flexibility in oil-mist sampling.

Kit includes:
- Sampling Pump (Escort ELF or LC)
- 3-piece 37-mm MCE filter cassette, 0.8 micron pore size, 10 filters per kit
- 110V charger
- Sampling line
- Garment clip
- Instruction manual

Escort ELF® Kit

42 CFR Oil-Mist Sampling Kits

Escort ELF 42 CFR Sampling Pump Kit	711585
Escort LC 42 CFR Sampling Pump Kit	711586

General-Purpose Cassette

The general-purpose cassette is a 5-μ pore size PVC sample cassette that can be used for silica sampling. This cassette can also be used for all airborne particulate collection not limited to quartz or silica.

General-Purpose Cassette

General-Purpose Cassette	711361

This cassette is individually packaged in a sealed plastic bag. Each cassette is weighed by a robot to .01 mg at 70°F +/- 5° and 45 RH +/- 10%. Each cassette is attached to a Dust Data Card which includes the cassette serial number and actual weight. The cassette inlet contains a tamper-proof deflector plate, and the outlet contains an anti-blow-back check valve. Both the inlet and outlet openings are capped (sealed) to ensure cleanness. The perimeter of the cassette housing is sealed with tamper-proof sealing tape.

Because of the extreme accuracy of the MSA weighing process, users of this cassette can sample the atmosphere for dust particulate and have the analytical analysis performed with complete confidence in its accuracy.

Sampling Pump Accessories

Gemini® Twin-Port Sampler

For low-flow control when sorbent tubes are used, the patented Gemini Twin-Port Sampler is a valved mechanism that allows flow adjustment down to 1 mlpm (0.001 lpm to 500 mlpm total between both tubes). U.S. Patent No. 5,370,004.

As an added benefit, the Gemini accessory permits simultaneous sampling from sorbent tubes, with independently controlled flow rates of each. Dual sampling means two like sorbent tubes can be attached for simultaneous sampling at different flow rates, or two different tubes can be used to sample two types of substances at once.

Filter Media

Asbestos Sampling Filter Cassettes

General Purpose Filter Cassettes

Sorbent Tube Sampling	
Gemini Twin-Port Sampling Kit—includes Gemini Sampler, tube protectors, Y-connector, clips and carrying case	497697
Charcoal Sampling Tubes (150mg), 50 tubes	697169
Charcoal Sampling Tubes (600mg), 50 tubes	697170
Silica Tubes (225 mg), 50 tubes	697171
Silica Tubes (600 mg), 50 tubes	697172
Amberlite XAD-2, 50 tubes	697175
Hopcalite, 50 tubes	697176
Carbotrap, 25 tubes	697174
Carbosieve, 25 tubes	697173
Tenax/CMS	491165

Cassette Sampling

General Purpose Filter Cassettes	
Fifty complete 3-piece preloaded filter cassettes with MCE filters.	
With 25mm, 0.8-µ pore size	695677
With 37mm, 0.8-µ pore size	695676

Filter Discs for Nuisance Dust Sampling	
Used with 37mm cassettes.	
PVC, 0.5-µ pore size, 50/pack	459733
PVC, 0.8-µ pore size, 50/pack	812805
PVC, 5.0-µ pore size, 50/pack	625413
Glass Fiber	463784

MCE Filter Discs for Asbestos and Nuisance Dust	
25mm, 0.8-µ pore size, 100/pack	695674
37mm, 0.8-µ pore size, 50/pack	463797
37mm, 0.45-µ pore size, 50/pack	463796

Silver Membrane Filters for Silica, Coke Oven Emissions & Carbon Black	
Silver Membrane, 0.8-µ pore size, 50/pack	464324

Asbestos Sampling Filter Cassette	
All units include 50 complete filter cassettes preloaded with 25mm MCE filters.	
With 0.8-µ pore size and 50mm anti-static cowl	695679
With 0.45-µ pore size and 5.0-µ pore size and 50mm anti-static cowl	696172

Coal Dust and Silica Filter Cassette	
Preweighed filter cassette with 5-µ pore size PVC filter and Mine Data Card - Coal Dust	803462
Preweighed filter cassette with 5-µ pore size PVC filter and Data Card - Silica	711361

Respirable Dust Sampling w/Cyclone Assembly	
10mm Cyclone Assembly, used with MSHA pre-weighed cassettes	456243
10mm Cyclone Assembly, IH version used with 37mm cassettes	10044015

Gas Sampling Bags	
Teflon Sample Bag Assembly	471677
Tedlar Sample Bag Assembly	472992

Miscellaneous Accessories

MSA's complete line allows users to load sampling cassette cases and select your own combinations of sampling media. Your MSA distributor can help you select the accessories that best suit your application requirements.

Filter Cassette Cases, 2-piece, 25mm, pack of 50	695681
Filter Cassette Cases, 2-piece, 37mm, pack of 12	625412
Filter Cassette Cases, 3-piece, 37mm, pack of 10	449347
50mm-long Cowl for 25mm Filter Cassette Case, pack of 5	695683
25mm Support Pad (felt backup disc), pack of 100	695684
37mm Support Pad (felt backup disc), pack of 25	449375
25mm Cellulose Bands, jar of 60	484683
37mm Cellulose Bands, jar of 60	625415
37mm Stainless Steel Coupler for 3-piece filter cassette case used with Cyclone Assembly	457392
Plastic Coupler for preweighed filter cassette sampling used with Cyclone Assembly	457391
Sampling Line Assembly (used with all pumps and filter cassette cases)	456226
25mm Filter Cassette Case Sampling Line Coupler, package of 10	695685
37mm Filter Cassette Case Sampling Line Coupler, package of 3	459743
Charcoal Filter Tubes—for use in in-line sampling to protect pumps from vapor damage	804403
Supplementary Parts Kit—includes 3 stainless steel support screens, small brush, tweezers, and press/pry tool	456246
All-Glass Impinger Assembly—includes fritted-glass flask, inlet cap, nozzle, and cap	10008396
Bubbler for Fritted-glass Flask	10008397
Flask Holster	10008398
Tubing for Flask	93495

Coal Dust Cassettes - P/N 803462

Gas Sampling Bag

Couplers and Supplementary Parts Kit

Impinger assemblies and accessories

Sampling Pump Calibration Check Devices

A primary calibration device, the DigiCal™ Calibrator provides instantaneous calibration for instruments like the MSA Escort LC or the secondary flow standard inside the Escort ELF Sampling Pumps. Just press the plunger and the DigiCal Calibrator does the work. Its unique flow cell replaces conventional bubble tubes and makes calibration easier.

The DigiCal Calibrator achieves extreme accuracy by utilizing a computerized flow meter that provides instantaneous flow readouts on a digital display. Accurate measurements are possible within ±0.5 percent at any altitude.

The DigiCal Calibrator makes sampling pump calibration a stress-free, one-step procedure.

For more complete information, see Bulletin 0810-34-MC.

Sampling Pump Calibration Check Devices	
Primary Calibration Devices	
DigiCal Calibrator	655101
Air Inlet Caps, pkg of 2	655102
110V Charger with A/C Adapter	655112
Bubble Solution, 4-oz bottle	655273
Sub C Battery Pack	655169
Secondary Calibration Devices	
Flowmeter for use with Flow-Lite and Escort Sampling Pumps, 0.2 to 4 lpm	490197
Flowmeter for use with Flow-Lite and Escort Sampling Pump with Gemini Twin-Port Sampler, 30 to 370 mlpm	490198

Ventilation Smoke Tube Kits

MSA's Ventilation Smoke Tube Kits are for use where controlled generation of a visible smoke is desired in order to determine the velocity of slow-moving air currents and establish their direction and flow patterns in shafts, mines and tunnels. They can also be used in commercial buildings and industrial processing plants to determine velocity and flow patterns of heating, ventilating, and air-conditioning systems.

For more complete information, see Data Sheet 08-00-20.

Ventilation Smoke Tube Kits	
Ventilation Smoke Kit, including aspirator bulb, two rubber plugs, and six smoke-producing tubes contained in plastic carrying case	458481
Ventilation Smoke Kit, including aspirator bulb, six tube caps, and two glass smoke-producing tubes contained in plastic carrying case	5607
Ventilation smoke tubes, box of 12	458480
Glass smoke tubes, box of 10	5645

Airborne Compounds Sampling Chart

This MSA/SupelCo guide to sorbent tube sampling lists MSA part numbers. It is a very comprehensive guide to all types of air sampling using personal sampling pumps.

Airborne Compounds Sampling Chart	
MSA/SupelCo Sampling Chart	814473

Instrumentation

Calibration

Galaxy® Automated Test System

Extremely Easy to Use
- Standard web browser accessibility for data retrieval and reporting
- Industry-standard memory card available for simple data retention
- System does not require a computer or network interface
- Works without the touch of a single button
- Minimal training needed

Versatile and Expandable
- Up to 10 systems can be interconnected
- Instrument charging option available
- Optional battery pack available for remote use

Durable, Innovative Design
- Wireless- or wired-network interface available
- Inventive system door also functions as dust cover
- Guaranteed to work in the harshest environments
- In-line gas cylinder holster available; keeps the work area clean and orderly

Value-Driven Performance
- All-inclusive, 2-year warranty
- High quality, cost-effective solution
- Very low total cost of ownership

For Assemble-to-Order information, see the Galaxy ATO Chart on p. 99.

Galaxy System Kits

	Solaris Galaxy Kits	Sirius Galaxy Kits	Orion Galaxy Kits	Altair Galaxy Kits	Orion*plus* Galaxy Kits
Basic Standalone Kit					
Basic System	10061051	10061050	10061824	10078252	10082571
Standard Standalone Kit (Includes Regulator)					
Standard System	10061783	10061810	10061825	10078253	10082577
Standard System + Charging	10061784	10061811	10061826	—	10082582
Standard System + Cylinder Holder	10061785	10061812	10061827	10078259	10082585
Standard System + Charging, Cylinder Holder	10061786	10061813	10061828	—	10082592
Smart Standalone Kit (Includes Regulator, Memory Card)					
Smart System	10061787	10061814	10061829	10078255	10082580
Smart System + Charging	10061788	10061815	10061830	—	10082583
Smart System + Cylinder Holder	10061789	10061816	10061841	10078256	10082586
Smart System + Charging, Cylinder Holder	10061790	10061817	10061842	—	10082595
Portable Kits** (Includes Regulator, Battery Pack)					
Portable System	10061802	10061818	10061843	10078257	10082512
Portable System + Memory Card, Cylinder Holder	10061801	10061819	10061844	10078258	10082584
Network Kits (Includes Regulator, Wired Ethernet Access)					
Wired Network System	10061803	10061820	10061845	10078259	10082578
Wired Network System + Charging, Cylinder Holder	10061804	10061821	10061847	—	10082593

Accessories

710288	Demand Flow Regulator
10047342	North American Power Supply
10047343	Global Power Supply

Assemble-to-Order (ATO) System: You Make the Choices

The ATO System makes it easy to "custom order" the Galaxy Automated Test System, configured exactly the way you want it. You can choose from an extensive line of base components and accessories. See the ATO chart below to make your selections.

Galaxy Automated Test System Assemble-to-Order (ATO) Options

A. Test Stand Instrument Type
Each Galaxy test stand has a dedicated instrument type. Up to 10 specific systems can be mixed and matched; however, different instruments types will not work in the same test stand. The Solaris® and Orion® Instruments must have datalogging installed to operate with the Galaxy test stand.
Note: *The Altair Galaxy test stand should only be used with CO, H_2S and O_2 versions of the Altair and Altair Pro Single-Gas Detectors.*

Test Stand Options	Code
Solaris, Solaris with ALkaline Battery	A
Sirius	B
Orion	C
Altair/Altair Pro	D
Orion^{plus}	E

B. Calibration Cylinders
The Solaris, Orion and Altair Galaxy test stand, by default will operate with 1 calibration gas cylinder. The Sirius Galaxy test stand, by default, will operate with 2 calibration gas cylinders. If your system configuration requires 3 cylinders for calibration, select option "1".
Note: *If ordering the Orion^{plus} test stand, option 1 must be selected.*

Calibration Cylinder Options	Code
No	0
Yes	1

C. Regulator
At least 1 demand flow regulator is required for either the Solaris, Orion or Altair Galaxy Test Stands. At least 2 demand flow regulators are required for the Sirius Galaxy Test Stand. The number of regulators you need equals the number of gas cylinders required for an instruments calibration.

Regulator Options	Code
1 Regulator	1
2 Regulators	2
3 Regulators	3
None	0

D. Cylinder Holder
The number of cylinder holders should match the number of gas cylinders required for an instruments calibration. Included in this option is the ability to order either 1, 2, or 3 cylinder holders.

Cylinder Holder Options	Code
1 Cylinder Holder	1
2 Cylinder Holders	2
3 Cylinder Holders	3
None	0

E. Instrument Charging
If you'd like to have your new Galaxy system installed with the ability to charge your instrument, select "1" for this option. (Requires instrument with rechargeable batteries).
Not compatible with Solaris with alkaline batteries, ALTAIR, and ALTAIR Pro instruments.

Charging Options	Code
No	0
Yes	1

F. Power Supply
A power supply is required to power each Galaxy test stand. The global power supply comes with several international plug outlet configurations for countries outside of North America, for this option select "G". Select the battery pack option "B" for locations (includes North American supply) where AC power may not be easily accessible. If you choose the instrument charging option, the battery pack option is not available.

Power Supply Options	Code
North American Supply	N
Global Supply	G
Battery Pack & North American	B
Battery Pack & Global Supply	X

G. Memory Card
If you'd like to have a removable memory card installed in your new Galaxy System, select option "1". A memory card reading device is required to read the memory card, this must be entered as a different line item on your order. Only 1 memory card is needed per Galaxy System.

Memory Card Options	Code
No	0
Yes	1

H. Network Interface Module
For wired (ethernet) connectivity to your internal network, select option "A". For wireless (802.11b) connectivity to your internal network, select optioin "B". The location where the Galaxy will be installed must have the capability for this option to operate properly. Only 1 network interface module is needed per Galaxy system.

Network Interface Module Options	Code
None	0
Wired Web Interface	A

Your Model Part Number

Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection …

A	B	C	D	E	F	G	H		

A-GALAXY- [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] **0** **0**

Instrumentation

Regulators

Gas Miser® Demand Regulator: The Intelligent Regulator

The Gas Miser Regulator is the most advanced, yet simple-to-use calibration gas delivery system available. Made of nickel-plated brass and polished aluminum (especially important for reactive gases), the Gas Miser Regulator can supply gas flow from 0.1 lpm to 3.0 lpm. But that's only the beginning. Designed for use with any MSA Model RP Calibration Cylinder except chlorine and ammonia*, the Gas Miser Regulator features an automatic ON/OFF valve that releases gas only on demand. So only the amount of gas needed to calibrate your MSA instrument is delivered accurately. When the calibration is complete, the Gas Miser Regulator shuts off automatically. And, for user convenience, the regulator can stay connected to the cylinder where it remains in a ready state—making it ideal for such fixed installations as work benches and calibration stations.

Gas Miser ® Model RP

Gas Miser® Model BD-20

The Gas Miser Regulator also eliminates the need to change regulators to accommodate different instruments or flow rates. It's not only intelligent, it's cost-efficient. Supplied with calibration tubing and special fitting.

 * A Gas Miser Regulator for chlorine and ammonia is available for Model RP cylinders —P/N 10034391

Natural Gas Demand Regulator

This low-pressure Demand Regulator is designed to be used with MSA Instrument Calibration Systems to supply 100% natural gas. The Demand Regulator will automatically supply 100% natural gas to the calibrator as required. No adjustments are necessary or provided. Like the Gas Miser Regulator, the Natural Gas Regulator features an automatic ON/OFF valve that releases gas only on demand. Comes complete with (barb type) outlet fitting and easily connects to natural gas supply with W" NPT thread. Recommended for use with pressure of 0.3 to 5.0 psig.

Model RP Combination Regulators

Two regulators in one. Trigger activation allows a bump test or calibration check in the "SQUEEZE" mode or fixed-flow calibration in the up or "LOCKED" position. Designed for use with all Model RP and Econo-Cal calibration cylinders. Supplied with calibration tubing and special fitting.

Gas Miser® Manifold

The Gas Miser Manifold is not only a cylinder holder but it also incorporates a 4-station "bump test" or calibration manifold. It works with Model RP and Econo-Cal cylinders and Gas Miser regulator on any pumped or aspirated instrument. The manifold will supply the correct amount of gas required and will bump test or calibrate up to four instruments simultaneously. Gas Miser regulator sold separately.

Regulators	
.25/1.5 LPM Flow Control	
Model RP Cylinder .25 lpm*	467895
Model RP Cylinder 1.5 lpm	467896
Gas Miser Demand Regulator:	
Model RP	710288
Model RP, Chlorine and Ammonia	10034391
Model BD-20, with CGA 590 fitting	710289
Natural Gas Demand Regulator	
Natural Gas Demand Regulator	710545
Model RP Combination Regulator	
Model RP Combination Regulator, .25 lpm	711175
Model RP Combination Regulator, 1.5 lpm	711174
Gas Miser Manifold	
4-station Manifold	710274
Model RP Calibration Check Kits	
Check Kit, Model RP, with 1.5 lpm regulator—complete	477150
Check Kit, Model RP, with 0.25 lpm regulator—complete	477149

* Can be used with chlorine and ammonia; replaces P/N 809945.

.25/1.5 LPM Flow Control Model RP

Model RP Calibration Check Kits

Model RP Check Kits consist of a regulating valve which includes a gauge to measure container pressure, an adapter hose, sensor adapter (where applicable), instructions, and a case fitted with room for two Model RP cylinders of calibration check gas.

Calibration Gas

Each MSA Calibration Gas Cylinder is shipped with an individual copy of a material safety data sheet (MSDS) and an individual copy of a certificate of analysis.

MSA certifies that the gas mixture in calibration gas cylinders was prepared gravimetrically, using NIST traceable weights. The lot number and nominal value of the gas constituents in percent by volume, percent by mass, PPM, or volume are specified on the cylinder. The uncertainty statement of the specified nominal value is also listed.

Model RP and Model R Calibration Cylinders—Non-Reactive Gases, Steel Cylinder, 100 Liters					
			100 LTRS 1000 PSI	19 LTRS 300 PSI	34 LTRS 500 PSI
Gas Fill	Gas Mixture	Background	Model RP	Model R	Econo-Cal
Air	air zero (THC < 1 ppm)	—	801050	—	—
Carbon Monoxide	400 ppm carbon monoxide	air	806255	—	—
	300 ppm carbon monoxide	air	473180	461769	—
	200 ppm carbon monoxide	air	809243	—	—
	100 ppm carbon monoxide	air	809242	—	—
	50 ppm carbon monoxide	air	809241	—	—
	100 ppm carbon monoxide	nitrogen	806734	—	—
Hydrogen	0.8% hydrogen	air	803102	—	—
Isobutylene	100 ppm isobutylene	air	494450	—	10048279
Methane	2.5% methane	air	491041	459942	—
	6.6% methane	nitrogen	801049	—	—
Oxygen	20.8% oxygen	nitrogen	479857	468248	—
	5.0% oxygen	nitrogen	493580	476302	—
Nitrogen	100% nitrogen	—	481317	—	—
Nitrous Oxide	10 ppm nitrous oxide	nitrogen	806736	—	—
Pentane	0.75% pentane (50% LEL)	air	804532	—	—
Propane	0.6% propane	air	493579	—	—
Combination Gas Cylinders	0.35% pentane, 19.0% oxygen, 100 ppm carbon monoxide	nitrogen	10007047	—	—
	0.6% propane, 15% oxygen, 60 ppm carbon monoxide	nitrogen	801051	—	—
	1.45% methane, 300 ppm carbon monoxide, 15% oxygen	nitrogen	10010162	—	—
	2.5% methane, 60 ppm carbon monoxide, 15% oxygen	nitrogen	813718	—	—
	2.5% methane, 300 ppm carbon monoxide, 15% oxygen	nitrogen	10040791	—	—
	1.45% methane, 15% oxygen	nitrogen	478192	—	—

Model RP

Model RP Cylinder
Contents: Pressure 1000 psig; approximately 100 liters at atmospheric pressure
Size: 13-3⁄4" x 3"
Weight: 2 lb 13 oz
Material: Steel

Model RP and Econo-Cal Calibration Cylinders—Reactive Gases, Aluminum Cylinders, 58 & 34 Liters

Gas Fill	Gas Mixture	Background	58 LTRS 500 PSI Model RP	Econo-Cal
Ammonia	25 ppm ammonia	nitrogen	814866	711078
Chlorine	10 ppm chlorine	nitrogen	806740	711066
Hydrogen Sulfide	40 ppm hydrogen sulfide	nitrogen	467897	711062
	15 ppm hydrogen sulfide	nitrogen	806253	711064
	10 ppm hydrogen sulfide	nitrogen	467898	711060
Nitric Oxide	50 ppm nitric oxide	air	812144	711074
Nitrogen Dioxide	10 ppm nitrogen dioxide	air	808977	711068
Phosphine	0.5 ppm phosphine	nitrogen	710533	711088
Hydrogen Chloride	40 ppm hydrogen chloride	nitrogen	710210	711080
Hydrogen Cyanide	10 ppm hydrogen cyanide	nitrogen	809351	711072
Sulfur Dioxide	10 ppm sulfur dioxide	air	808978	711070
Combination Gas Cylinders	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 10 ppm hydrogen sulfide	nitrogen	804770	711058
	1.45% methane, 15% oxygen, 20 ppm hydrogen sulfide	nitrogen	10048788	10048790
	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	—	10058023
	1.45% methane, 15% oxygen, 60 ppm carbon monoxide, 20 ppm hydrogen sulfide	nitrogen	10045035	10048280
	1.45% methane, 15% oxygen, 10 ppm hydrogen sulfide	nitrogen	804769	711056
	2.5% methane, 15% oxygen, 300 ppm carbon monoxide, 10 ppm hydrogen sulfide	nitrogen	813720	711076
	2.5% methane, 15% oxygen, 60 ppm carbon monoxide, 20 ppm hydrogen sulfide	nitrogen	10048890	10048981
	1.45% methane, 15% oxygen, 20 ppm hydrogen sulfide	nitrogen	10048889	10048888
	1.45% methane, 15% oxygen, 10 ppm hydrogen sulfide, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	10050744	10058022
	0.35% pentane, 19% oxygen, 100 ppm carbon monoxide, 35 ppm hydrogen sulfide	nitrogen	10007049	—
	1.45% methane, 15% oxygen, 300 ppm carbon monoxide, 2.5% carbon dioxide	nitrogen	10058021	

Note: Reactive gases have an expiration date listed on each cylinder. This is to ensure the highest quality and accuracy for instrument calibration. Most cylinders have an expiration date of 12 months. Check with MSA Customer Service for the exact shelf life of a particular calibration cylinder.

Model RP   *Econo-Cal*

Model RP Cylinder
Contents: Pressure 500 psig; approximately 58 liters at atmospheric pressure
Size: 13-3/4" x 3"
Weight: 1 lb 11 oz
Material: Aluminum

Econo-Cal Cylinder
Contents: Pressure 500 psig; approximately 34 liters at atmospheric pressure
Size: 13-3/4" x 3"
Weight: 1 lb 1 oz
Material: Aluminum

Model RP Calibration Cylinder—Steel, 100% Methane

Contents:	Pressure 1000 psig; approximately 58 liters of pure methane with odorant added to smell like natural gas in all commercial gas lines		
Size: 8-1/2" x 3"	**Weight:** 1 lb 13 oz	**Material:** Steel	
Gas Fill	**Gas Mixture**	**Part No.**	
Methane	100% Methane	711014	

Model BD-20 Calibration Cylinders

Contents:	Pressure 2200 psig; approximately 552 liters (20 cu ft) of gas at atmospheric pressure		
Size: 25" x 4-1/4"	**Weight:** 10 lb 9 oz	**Material:** Steel	
Gas Fill	**Gas Mixture**	**Background**	**Part No.**
Methane	2.5% Methane, 15% Oxygen, 60 ppm Carbon Monoxide,	Nitrogen	710566
	1.45% Methane, 15% Oxygen, 60 ppm Carbon Monoxide	Nitrogen	710565
Air, zero	Air, zero, THC<1 ppm	—	710776

Model BD-20 Calibration Cylinders

Squirt Gas Bump Tester

Squirt Gas Bump Test Kit, less cylinder, but with required fittings and adapters, complete with instructions	813411

Cylinders for Squirt Gas

Instrument	Squirt Gas Cylinder	Combustible		Oxygen	Carbon Monoxide	Hydrogen Sulfide	Isobutylene	Balance
		Methane	Pentane Simulant					
Explosimeter	815307	2.5%	See cylinder	—	—	—	—	Air
Gasport	814350	2.5%	—	15% O_2	60 ppm CO	—	—	Nitrogen
Gasport	814349	2.5%	—	15% O_2	300 ppm CO	35 ppm H_2S	—	Nitrogen
Passport, FiveStar	814497	1.3%	50% LEL	15% O_2	60 ppm CO	—	—	Nitrogen
Passport, FiveStar	814559	1.3%	50% LEL	15% O_2	300 ppm CO	35 ppm H_2S	—	Nitrogen
MiniCO** Responder	814978	—	—	—	60 ppm CO	—	—	Air
MiniH2S*Responder	814979	—	—	—	—	35 ppm H_2S	—	Nitrogen
MicroGard**	815308	1.3%	52% LEL	15% O_2	—	—	—	Nitrogen
Passport PID II	815704	—	—	—	—	—	100 ppm	Air

* Shelf life item. See note page 102.   ** Requires calibration adapter.

Contents: Pressure 155 psig; approximately 11 liters at 70°F

Cylinder Holders

Single Portable Cylinder Holder

The Single Portable Cylinder Holder is designed for use with all MSA Model R and Model RP cylinders. It fits neatly on a workbench or shelf, and its unique design ensures that the calibration cylinder (with the regulator attached) always stays where you put it.

Double Cylinder Holder, Wall-Mounted

The Wall-Mounted Double Cylinder-Holder holds all MSA Model R and Model RP cylinders. A molded base and holding straps keep the cylinders securely in position, yet both cylinders and/or regulators can be easily changed. The holder is ideal for field station calibrations and can be easily mounted for workbench applications.

Cylinder Holders

Single Cylinder Holder, 6" wide x 13" long x 4" high	710386
Double Cylinder Holder, 17" high, 10" wide, 3V" deep at base	710483

Calibration Cylinders Are Recyclable!

MSA has affiliated with the Association of Retarded Citizens, Butler County—a nonprofit organization that employs mentally retarded citizens—and established a Cylinder Recycling Center. The calibration cylinders are not refilled, but salvaged for scrap. All money generated from selling the scrap cylinders is placed in the ARC operating fund for salaries and operating costs.

Calibration cylinders are considered hazardous unless the cylinders are empty. MSA has developed special devalving tools that will ensure the cylinder is empty and render the cylinder non-fillable. For your convenience, MSA also offers a specially pre-addressed shipping box (also recyclable) which helps you pay the lowest shipping costs available.

The MSA Recycling Center limits the return of calibration cylinders to MSA-logoed cylinders only. Non-MSA cylinders will be rejected. Contact the Customer Service Center for additional details at 1-800-MSA-2222.

Recycling Accessories

Devalving Tool, Model "RP" & Econo-Cal Cylinders	711228
Devalving Tool, Model "R" cylinders	711229
Shipping Box, Special, Pre-addressed	711227

Head, Eye, Face and Hearing Protection

Head, Eye, Face and Hearing Protection

Your job is burdened with personal hazards. Within a few minutes on the job site, a falling object can split your head open or a piece of grit can destroy your eye, if you aren't wearing a protective helmet and eyewear. What may appear to be bearable loud noise can gradually destroy your hearing—if it repeats many times during your work day. It's smart to outfit yourself automatically before any job begins.

Especially if you work in construction, dust and gritty particles can be projected into your eyes. Falling building materials and projectiles can cause serious injuries or even death.

Maybe you don't think your job is that dangerous. But why take chances when a single accident can change your life?

What do you need?

Protective industrial helmets, or hard hats, are always visible on the job site, particularly where falling hazards exist. Other personal protection can easily be attached to the hard hat to protect the face and ears.

Head protection in the U.S. commonly takes the form of protective helmets, Type I (top impact) or Type II (lateral impact) that meet the requirements of ANSI Z89.1-1997. Type I helmets are designed to protect from top impact and penetration, while the Type II helmets give lateral impact and penetration protection.

At MSA, customization is our specialty. We can decorate your head protection with any company logo or design or even photographic images. V-Gard® Caps featuring your favorite NFL team or Nascar Racing Team drivers/teams or Freedom Series make you stand out in a crowd while protecting your head.

Faceshield frames are designed so that various lightweight plastic and wire-screen faceshields can be quickly snapped into place. MSA's vented Advance® Caps have air ventilation slots in the crown and ratchet suspensions for a secure, comfortable fit. Helmets come in all colors and sizes, with different suspension styles. They are easily personalized with customized logo imprinting and available in special designs, such as your favorite NFL team.

Today's protective eyewear comes in stylish colors, with wraparound lenses that resist fogging and protect from the sun's harmful UV rays. Safety glasses are lightweight and have more flexible temples, more comfortable nose bridges, and side shields. Lenses can be yellow, blue, green, or even reflective-mirrored.

Up-to-date hearing protection—in the form of electronic ear muffs—can add new dimensions in communication and listening to your favorite music while protecting your hearing. Passive ear muffs can be fastened to the hard hat, and raised or lowered on demand. Disposable ear plugs on cords offer an alternative to helmet-mounted ear muffs, because they provide convenience, comfort, and low cost as well as high noise-reduction ratings.

What do you want?

Workers want personal protective equipment that's so reliable, comfortable, and easy to work in that they hardly notice they are wearing it.

Employers, of course, want reliable protection that employees will wear—at economical prices.

To keep employees safe and comply with various government standards, starting with OSHA regulations, employers must be knowledgeable about both the range of potential hazards and the types of safety equipment needed. Fortunately, along with continuous technological improvements in materials and design, every year brings new safety products that are lighter and more comfortable, reliable, and stylish!

Scope of Z89.1 - 2003

American National Standard for Head Protection

The most recent standard was approved in July 2003 and continues to cover requirements for two types of impact-resistant helmets:

1. TYPE I (Top Impact)

Helmets intended to reduce the force of an impact to the top of a wearer's head.

2. TYPE II (Top and Lateral Impact)

Helmets intended to reduce the force of an impact resulting from a blow received off-center or to the top of a wearer's head.

The new standard's performance requirements for Type I and Type II Helmets are equivalent to those specified in the 1998 revision.

Electrical Performance

1. CLASS E (Electrical)

Helmets intended to reduce the danger of exposure to high-voltage electrical conductors, proof-tested at 20,000 volts.

2. CLASS G (General)

Helmets intended to reduce the danger of exposure to low-voltage electrical conductors, proof-tested at 2,200 volts.

3. CLASS C (Conductive)

Helmets not intended to provide protection from electrical conductors.

The electrical performance requirements in the 2003 standard are identical to those in the 1997 standard.

MSA Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010

V-Gard® Protective Caps and Hats

Third-party certified by

SEI
SAFETY EQUIPMENT INSTITUTE

V-Gard Protective Caps and Hats from MSA consist of a polyethylene shell and suspension system working together as a protection system. V-Gard headwear features advanced styling in either cap or hat styles, with the cap available in three sizes: small (6–71/8), standard (61/2–8) and large (7–81/2).

V-Gard Caps and Hats meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003, Class E, and also as outlined in CSA Z94.1-2005 (Class E) with 1-Touch® and Fas-Trac® suspensions.

V-Gard Caps and Hats are not specifically designed to protect against lateral blows from the front, side, or rear. MSA's Vanguard™ II Protective Helmets are so designed and must be used if lateral protection is desired. For more information, contact your MSA distributor.

V-Gard® Protective Cap

V-Gard® Protective Hat

⚠WARNING

Do not mix suspension and helmet sizes. Make sure the sizes match (example: standard-size suspension with standard-size helmet). Use only MSA suspensions on an MSA helmet. Failure to comply with the above will reduce the energy-absorbing ability of the protective helmet, which can result in serious injury or death.

V-Gard Complete Assemblies

Color	Small V-Gard Slotted Cap		Standard V-Gard Slotted Cap				Large V-Gard Slotted Cap		V-Gard Hat Non-Slotted		
	w/ Staz-On Suspension	w/ Fas-Trac* Suspension	w/ Staz-On Suspension	w/ 1-Touch* Suspension	w/ Fas-Trac* Suspension	w/ Uni-Pro Suspension	w/ Staz-On Suspension	w/ Fas-Trac Suspension	w/ Staz-On Suspension	w/ 1-Touch* Suspension	w/ Fas-Trac* Suspension
White	466354	477477	463942	10057441	475358	10004760	473284	477482	454733	10058321	475369
Blue	466355	477478	463943	10057442	475359	10004762	476928	477483	454732	10058320	475368
Yellow	466356	477479	463944	10057443	475360	10004761	473285	477484	454730	10058318	475366
Orange	•	•	463945	10057444	475361	10004767	•	See Note	454734	10058322	496075
Red	•	•	463947	10057446	475363	10004763	•	See Note	454736	10058324	475371
Green	•	•	463946	10057445	475362	10004765	•	See Note	454735	10058323	475370
Gray (navy)	•	•	463948	10057447	475364	10004766	•	See Note	454731	10058319	475367
Hi-Viz Orange	•	489368	488148	10057420	488146	10004764	•	489364	489360	10058326	10021292
Hi-Viz Lime Green	•	•	815558	•	815565	10017732	•	•	815562	•	815570
Hi-Viz Yellow-green	•	•	•	10061514	10061512	•	•	See Note	•	10061516	10061515
Dark (Canadian) Blue	•	•	•	•	802972	•	•	•	•	•	802975
Gold	•	•	464852	•	475365	10004768	•	See Note	•	•	•
Robin's Egg Blue	•	•	463111	•	495853	•	•	•	•	•	•
Brown	•	•	464658	•	495854	•	•	•	•	•	•
Silver	•	•	484340	•	495855	•	•	See Note	•	•	•
Tan	•	•	461180	•	•	•	•	•	•	•	•
Black	•	•	475235	•	492559	•	•	See Note	•	•	•
Light Buff	•	•	478237	•	495856	•	•	•	•	•	•
Purple	•	•	488398	•	495858	•	•	•	•	•	•
Pink	•	•	•	•	495862	•	•	•	•	•	•
Special V-Gard Assemblies											
White, w/L/B and C/H (Class C)	•	•	460018	•	•	•	•	•	460069	•	815009
White, w/American Flag	•	•	474159	•	•	•	•	•	•	•	•
V-Gard Assembly with Swing-Ratchet Suspension											
White standard-size V-Gard Cap, w/Swing-Ratchet Suspension											10004689

Note: These colors are available as special material orders with a minimum quantity of 20 helmets per order.
*CSA approved.

Many Americans are looking for a way to express our country's solidarity. For this reason, MSA has designed the *Freedom Series* of helmets. This series features a V-Gard® Cap with Fas-Trac® ratchet suspension and a patriotic design over the entire shell. See p. 110 for more information.

Head, Eye, Face and Hearing Protection

Accessories for V-Gard® Caps and Hats

Replacement Suspensions

Fas-Trac® Ratchet Suspension System

Staz-On® Pin-Lock Suspension System

1-Touch™ Suspension System

Swing-Ratchet Suspension System

Replacement Suspensions			
	Small (6–7¹/₈)	Standard (6¹/₂–8)	Large (7–8¹/₂)
Staz-On Suspension	467386	10087218*	492566
Fas-Trac Suspension	492567	10087220*	492568
1-Touch Suspension			
For standard size V-Gard Cap or Hat (6¹/₂–8)			10061123
UniPro Suspension			
For standard size V-Gard Cap or Hat (6¹/₂–8)			10004788
Replacement sweatbands, for Uni-Pro only, pkg. of 5			10004786
Swing Ratchet Suspension			
Swing ratchet for standard size V-Gard Cap or Hat (6¹/₂–7⁵/₈)			816645

*P/N 10087218 replaces P/N 454230. P/N 10087220 replaces P/N 473332.

Adapters and Plastic Instant Release Attachments for Welding Shields

Plastic Instant-Release for Welding Helmet
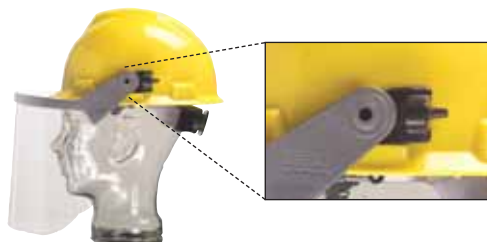
Kits permit the easy attachment of Welding Shields and SparkGard Faceshields with visors to MSA's helmets.

Defender + Faceshield Frame with Instant-Release

Welding Shield Attachments		
Plastic Instant-Release Attachment	**With lugs**	**Less lugs**
Instant-Release for slotted caps	10036456	10039111
Defender+ Frame with Instant-Release Attachment		
Defender + frame for slotted cap, without lock-down		10037098
Welding Kits		
Standard Adapter for Welding Helmets and Sparkgards		488525
EC Adapter Kit (positive positioning type)		806211
Sparkgard only		456568

Sound Control™ Cap Models

Hearing protection designed to fit your V-Gard Helmet.

EXC cap model *HPE cap model* *XLS cap model*

Sound Control Cap Models are designed for easy attachment to slotted MSA Caps and help to reduce the effects of excessive noise. Noise Reduction Rating (NRR) is third-party certified in accordance with ANSI S3.19-1974, CSA Class A and EN352-3.

Sound Control Cap Models	
HPE cap model, complete with brackets (NRR 27 dB)	10061272
EXC cap model, complete with brackets (NRR 25 dB)	10061230
XLS cap model, complete with brackets (NRR 22 dB)	10061535
Sound Blocker 26 cap model (NRR 26), for use with Defender + Faceshield Frame	10026398

Accessories for V-Gard® Caps and Hats

Defender® + Faceshield Frame for Slotted Caps

The Defender + Faceshield Frame for slotted caps is available in three versions (see details in ordering information below). Features of the Defender + Frame include:

- Front-drip-edge splash protection.
- Unlimited number of lift stop positions.
- Long-lasting O-ring pivot-joint design.
- Snap-in ear muff option.
- Easy in, easy out visor replacement.
- Optional cap lockdown clip (V-Gard, Topgard and SmoothDome cap models only).

Defender + Frame

Defender + Frame , Sound Blocker 26 Muff Assembly

Defender® + Foldback Faceshield Frames (Plastic and Metal)

Plastic Defender + Foldback Faceshield Frames (Cap on Left, Hat on Right)

Metal Defender + Foldback Faceshield Frames (Cap on Left , Hat on Right)

FoldbackFaceshield Frames come in plastic (dielectric) and metal. Both plastic and metal frames come in cap and hat models. These frames can be used with slotted or non-slotted helmets. All frames come without visors.

Defender + Faceshield Frames for Slotted Caps (Less Visor)

Defender + Faceshield Frame for V-Gard Caps with lockdown clip	10021614*
Defender + Faceshield Frame for V-Gard Caps, not equipped with lockdown clip	10021616
Ear Muff Accessory for Defender + Frame	
Sound Blocker 26 (26 NRR) (includes clips)	10026398
Nitrometer Additions	
Chin Guard for Nitrometer Mask, black polypropylene	10022242
Chin Guard for Nitrometer Mask, clear polycarbonate	10022241

*Meets CSA Z94.3.

Defender + Universal Foldback Faceshield Frames

Plastic (Dielectric) Defender + Foldback Faceshield Frames	
Cap, less visor	10016742
Hat, less visor	10005383*
Metal Defender + Foldback Faceshield Frames	
Cap, less visor	488160
Hat, less visor	488159

*Meets CSA Z94.3.

⚠ WARNING

Do not use metal Foldback Faceshield Frame in electrical applications. Failure to follow this warning can result in serious injury or death.

Defender® + Easy Release Faceshield Frame   *New!*

- To be used only with MSA slotted cap muffs
- Front drip-edge splash protection
- Unlimited number of stop positions
- Long-lasting, O-ring, pivot-joint design
- Easy-in, easy-out visor replacement
- Optional cap lockdown clip (V-Gard, Topgard and SmoothDome Cap cap models only).

Chip Arrester (Optional)

Wearers can choose the optional bright orange stretch nylon Chip Arrester with elastic. The Chip Arrester attaches to the frame on five points and helps to keep debris from falling behind the frame when the frame is raised over the hardhat.

Easy Release Frame with XLS Hearing Protection

Easy Release Frame with HPE Hearing Protection and Chip Arrester

Chip Arrester

Defender + Easy Release Faceshield Frames (Less Visor)

Defender+ Easy Release Frame for standard V-Gard cap, with lockdown clip, Black	10080783
Non-locking Defender+ Easy Release Frame, Black	10080785
Defender+ Easy Release Frame for standard V-Gard cap with lockdown clip, Hi-Viz Orange	10080786
Chip Arrester (Optional)	
Chip Arrester, Hi-Viz orange	10080794

Accessories for V-Gard® Caps and Hats

Visors

Choose from a wide variety of visors that fit easily on MSA faceshield frames. **MSA visors are manufactured for use on ONLY MSA frames and assemblies for compliance with ANSI Z87.1 2003.**

Visors should always be worn with primary eye protection such as MSA high impact-resistant spectacles or goggles. Visors should be inspected frequently and replaced immediately if worn, scratched, or damaged in any way. Selection of proper models for specific hazards and communication of all instructions, precautions, and limitations to the wearer is the responsibility of user safety specialists, who are also responsible to see that they are strictly observed. Failure to comply with any of the above could result in serious injury or death.

Approvals

All MSA Visors meet or exceed applicable requirements of ANSI Z87.1 2003.

⚠ WARNING

Do not use MSA visors for welding, elevated temperature applications, or for protection against other infrared radiation sources unless the MSA visor is approved for such applications. Never use any MSA visor for sports, simulated war games, paintball games, or similar activities. A pitted or scratched lens reduces eye protection and vision. Inspect routinely and replace worn or damaged parts immediately. Do not alter or modify this product. Do not use near open flame. Failure to follow these warnings can result in permanent impairment of sight, other serious personal injury, or death.

⚠ CAUTION

Maintenance: clean visor with mild soap and water. Cleaning dry or with coarse cloth will scratch the visor.

Visors		
Polycarbonate Visors	**Size (inches)**	**Part No.**
Clear (Molded)	10 x 20 x .060	10063106
Clear (Formed)	8 x 16 x .040	488131
Clear (Formed)	8 x 16 x .060	488132
Clear (Flat)	8 x 15^1/$_2$ x .040	10017934*
Clear (Formed)	8 x 19 x .060	488138
Clear (Formed)	6 x 16 x .060	491908
Clear (Fog-free)	8 x 16 x .040	802337
Propionate Visors	**Size (inches)**	**Part No.**
Clear	8 x 15^1/$_2$ x .060	10005883*
Dark Green	8 x 15^1/$_2$ x .060	10005885
Shade 5 (green) — **Z87 Basic Impact**	8 x 15^1/$_2$ x .060	10005882
Nitrometer Visors and Chinguards		
Visors	**Size (inches)**	**Part No.**
Clear polycarbonate	6 x 16 x .040	488126
Clear polycarbonate (fog free)	8 x 19 x .060	494916
Chinguards for Nitrometer Visors Listed Above		**Part No.**
Clear polycarbonate		10022241
Black polypropylene		10022242
Other Nitrometer Visor & Chinguard	**Size (inches)**	**Part No.**
Shade #5, green, propionate— **Z87 Basic Impact** (must be worn with chinguard)	6 x 16 x .060	10005881
Chinguard, polycarbonate, black (for use only with above visor P/N 10005881)		10013631
Wire Screen Visors (Z87.1 basic impact protection)	**Size (inches)**	**Part No.**
Plastic edge, 20 mesh (not for use in elevated temperatures)	6^1/$_2$ x 14	476356
Aluminum edge, 20 mesh (not for use in areas where splash may occur)	8 x 17^1/$_2$	457409

Arc Shield Visor**	**Size (inches)**	**Material**	**Part No.**
Light green tint (for electrical arc protection), 10 Cal	10 x 20 x .060	propionate	10006024
Nitrometer Arc Shield, light green	10 x 16 x .060	propionate	10063107

*Meets CSA Z94.3.

**Arc Shields meet NFPA 70E, Class 2.

Accessories for V-Gard® Caps and Hats

Medical Information Carrier System

This small, simple hardhat accessory can provide crucial, even lifesaving information, in the event of a medical crisis while the worker is on the job.

Medical Information Carrier System	
This small, simple hardhat accessory can provide crucial, even lifesaving information, in the event of a medical crisis while the worker is on the job.	
Medical Information Carrier System (pkg. of 10)	10013393

Helmet Lights and Slot Adapters

Stealthlite & Light Holder for Slotted Caps   *VersaBrite II Light*

MSA offers three helmet lights that fit into our special cap or hat adapters. All of the lights are FM and CSA-approved for intrinsic safety, and are non-incendive.

Helmet Lights and Slot Adapters	
VersaLite Helmet Light with 2 AA alkaline batteries	697259
Stealthlite Helmet Light (batteries not included)	697261
VersaBrite II Helmet Light with 2 AA alkaline batteries	697417
Light holder for slotted Cap—no metal parts	814322
Light holder for non-slotted Hat —May reduce the dielectric properties when bracket is attached.	814323
Helmet Light Replacement Parts	
Standard lamp module for the Versalite	697357
Standard lamp module for the Stealthlite	697356
Hi-Performance lamp module for the VersaBrite II	697418

Various V-Gard Helmet Accessories

Terri-Band Sweatband

Goggle Retainers

V-Gard and Advance Sun Shield

Chinstrap (attaches to suspension)   *Chinstrap (attaches to helmet)*

Various V-Gard Helmet Accessories	
Custom Terri-Band Sweatband **(single)**	10068911
Custom Terri-Band Sweatband **(pkg of 10)**	696688
Goggle Retainer for protective caps, less goggles	459458
Goggle Retainer for protective hats, less goggles	449895
Sun Shield for Standard V-Gard Cap only	697290
Sun Shield for V-Gard Hat only	697410
Sun Shield for Advance Cap	10039114
Chinstrap, plastic (attaches to the shell)	88128
Chinstrap, elastic (attaches to the suspension)	81391

Head, Eye, Face and Hearing Protection

Freedom Series™ Helmets

Let Freedom Shine!

Hardhat wearers can express their patriotism and protect their heads by wearing one of MSA's new special series of Freedom caps and hats. The bright designs are exceptionally attractive, with a superior shiny finish, on the V-Gard Cap and Hat shell.

The Freedom Series Caps, which come with MSA's Fas-Trac suspension are lightweight, durable, and comfortable. They meet all applicable requirements of a Type I helmet as outlined in ANSI Z89.1-2003 and CSA Z94.1-2005 (Class E). The helmet's accessory slots accept all MSA V-Gard accessories. Also, your logo can be custom-imprinted on top of the design, if desired.

The helmet's accessory slots accept all MSA V-Gard accessories. Also, your logo can be custom-imprinted, if desired.

American Eagle

New!

American Stars and Stripes Cap and Hat

American Flag and 2 Eagles Cap and Hat

Camouflage Cap and Hat

American Freedom Series Helmets		
Full Decoration	**V-Gard Cap with Fas-Trac® Suspension**	**V-Gard Hat with Fas-Trac® Suspension**
American Eagle	10079479	—
American Stars and Stripes Design	10052945	10071157
American Flag with 2 Eagles	10052947	10071159
Camouflage Helmet	10065166	10071155
Dual American Flag Design	10050611	—
Front Logo Only		
"United We Stand" V-Gard Cap	10034263	—

Dual American Flag Design   *"United We Stand" Cap*

Canadian Freedom Series Helmets		
Decoration	**V-Gard Cap with Fas-Trac® Suspension**	**V-Gard Hat with Fas-Trac® Suspension**
White with red Maple Leaf design	10050613	10082234
Black with red Maple Leaf design	10082233	10082235
Camouflage with Canadian Flag	10082443	—
Fleur-de-Lis	10067761	—

Canadian White with Red Maple Leaf Cap and Hat

Mexican Freedom Series Helmet	
Decoration	**V-Gard Cap with Fas-Trac® Suspension**
Patriotic Mexican	10052600

New!

Canadian Black with Red Maple Leaf Cap and Hat

Patriotic Mexican

New!

Camouflage with Canadian Flag   *Fleur-de-Lis Cap*

MSA Sports Logo Helmets

NFL V-Gard® Helmets

Wear them at work, at home, or even at the game. The NFL line of V-Gard Caps with the comfortable strap-adjustable, 1-Touch® suspension offers superior quality, comfort, and protection. NFL V-Gard Caps meet or exceed all applicable requirements for a Type I helmet as outlined in ANSI Z89.1-2003 (Class E) and CSA Z94.1-2005 (Class E). Safety directors will appreciate how NFL V-Gard Caps complement a safety program and improve wearer acceptance.

See our NFL line of spectacles on p. 129.

NFL V-Gard Helmets			
V-Card Cap	**Part No.**	**V-Card Cap**	**Part No.**
Arizona Cardinals	818384	Miami Dolphins	818399
Atlanta Falcons	818385	Minnesota Vikings	818400
Baltimore Ravens	818386	New England Patriots	818401
Buffalo Bills	818387	New Orleans Saints	818402
Carolina Panthers	818388	New York Giants	818403
Chicago Bears	818389	New York Jets	818404
Cincinnati Bengals	818390	Oakland Raiders	818405
Cleveland Browns	818391	Philadelphia Eagles	818406
Dallas Cowboys	818392	Pittsburgh Steelers	818407
Denver Broncos	818393	San Diego Chargers	818408
Detroit Lions	818394	San Francisco 49ers	818409
Green Bay Packers	818395	Seattle Seahawks	818410
Houston Texans	10031348	St. Louis Rams	818411
Indianapolis Colts	818396	Tampa Bay Buccaneers	818412
Jacksonville Jaguars	818397	Tennessee Titans	818413
Kansas City Chiefs	818398	Washington Redskins	818414

NFL Properties, the NFL, and its Member Clubs make no express or implied claims with respect to the effectiveness and safety of these products and have not manufactured or endorsed these products in any way.

College V-Gard® Helmets

New!

College V-Gard Helmets	
V-Card Cap	**Part No.**
Alabama Crimson Tide	10069357
Florida Gators	10069358
Georgia Bulldogs	10069359
Louisiana State Tigers	10069360
Miami Hurricanes	10079414
Michigan Wolverines	10069395
North Carolina Tarheels	10069356
Oklahoma Sooners	10081474
Southern California Trojans	10081473
Tennessee Volunteers	10069394
West Virginia Mountaineers	10081472

The College line of V-Gard Caps with the comfortable strap-adjustable 1-Touch® Suspension offers superior quality, comfort, and protection. College V-Gard Caps meet or exceed all applicable requirements for ANSI Z89.1-2003 for a Type I helmet and CSA Z94.1-2005 (Class E).

Safety directors appreciate how College V-Gard Caps complement their safety programs. When more workers are inclined to wear them, wearer acceptance is improved.

Display your loyalty to your favorite college team with MSA's new officially licensed College line of V-Gard Caps.

Head, Eye, Face and Hearing Protection

SmoothDome™ Slotted Cap

Available in early 2008!

MSA's SmoothDome Slotted Cap is a tough, lightweight polyethylene helmet with smooth crown and suspension system working togehter as a protective system. Its smooth silhouette is welcomed by welders, especially those in shipbuilding and general construction—and some workers simply prefer wearing a smooth-crowned hard hat.

SmoothDome Caps meet or exceed applicable requirements for a Type I (top-impact) helmet as outlined in ANSI Z89.1-2003, Class E (electrical high voltage).

SmoothDome Caps are not specifically designed to protect against lateral blows from the front, side or rear. MSA's Vanguard Type II protective helmets are so designed and must be used if lateral protection is desired. For more information, contact your local MSA distributor.

SmoothDome Cap		
Color	4-Point Fas-Trac Suspension	6-Point Fas-Trac Suspension
White	10074067	10084078
Blue	10074068	10084079
Yellow	10074069	10084080
Orange	10074070	10084081
Red	10074071	10084082
Green	10074072	10084083
Gray	10074073	10084084
Hi-Viz Orange	10074077	10084088
Hi-Viz Yellow Green	10074084	10084095
Replacement Suspensions		
4-Point Fas-Trac Suspension		10087220
6-Point Fas-Trac Suspension		10084023
Swing-Ratchet Suspensions		816645
Defender + Easy Release Faceshield Frames (less visor)		
Non-locking Defender+ Easy Release Frame, Black		10080785

Custom-Imprinting and Striping Logo Express® Service for MSA Helmets

A variety of MSA helmets are available with your logo, slogan or striping imprinted on the headwear. You can select the colors and the areas to be imprinted. MSA uses both single and multi-color imprinting techniques to provide a choice of up to four colors.

Image 2000℠

MSA offers the Image 2000 Service, which uses a photographic process to reproduce images on white MSA helmets only.

Striping

Ordering Information

A minimum quantity of 20 custom-imprinted caps or hats (of the same size or model) is required for initial and repeat orders.

If you have any questions, please call your local MSA distributor or MSA Logo Express 1-800-MSA-LOGO (1-800-672-5646). More details are also on our LogoExpress Web site: www.MSAnet.com/logoexpress

Ceremonial Gold Helmet   *New!*

MSA's new ceremonial gold helmet allows you to commemorate any special occasion with a treasured keepsake.
• Honor a special employee
• Commemorate a groundbreaking ceremony
• Present as a safety award

MSA's ceremonial gold helmet can be kept as a thoughtful remembrance of any celebration.

Does Not Meet Any Standards

Although this simulated shiny gold plastic hard hat comes with MSA's Fas-Trac Suspension, this helmet does not meet any standards for head protection, and cannot be used as an individual safety helmet. It is for show purposes only.

Ceremonial Gold Helmet	
Gold V-Gard Cap with Fas-Trac Suspension	10061550

Advance® Cap: Vented and Non-Vented Styles

Vented Advance Caps provide cooling vents for improved air circulation and comfort, while the **Non-Vented Advance Caps** are appealing to users who want both the new Advance styling AND dielectric head protection. **Advance Caps** from MSA feature a combination of advanced features and styling:

- Vented version for improved air circulation
- Optional 4- or 6-point Fas-Trac suspension system
- Lightweight design for added comfort
- Lateral contours above the ear for easy integration of hearing protection
- Glaregard™ underbrim to reduce reflective glare
- Custom printing available
- Sun Shield available—extends the brim all the way around

Advance Caps consist of a polyethylene shell and 4-or 6-point or Fas-Trac® ratchet suspension that work together as a protective system.

Advance Caps meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003. Non-Vented meet Class E and **Vented meet Class C**.

warm air flows out

cooling air flows in

Left: 4-Point Fas-Trac Replacement Suspension P/N 10034966
Right: 6-Point Fas-Trac Replacement Suspension P/N 10034967

Advance Cap with Sun Shield P/N 10039114

Advance Cap with Defender + Faceshield Frame, Visor, and Sound Blocker 26 Hearing Protector
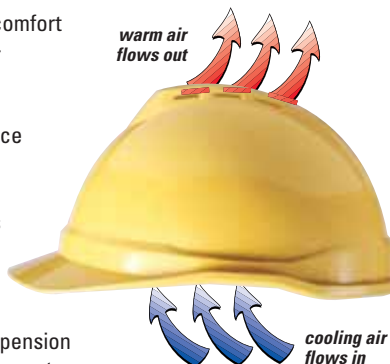
Advance Cap: Vented and Non-Vented Styles

Complete Assemblies - Vented

Color	4-Point Fas-Trac Suspension	6-Point Fas-Trac Suspension
White	10034018	10034027
Blue	10034019	10034028
Yellow	10034020	10034029
Red	10034022	10034031
Green	10034023	10034032
Hi-Viz Orange	10034026	10034035
Hi-Viz Yellow Green	10074819	10074820

Complete Assemblies - Non-Vented

Color	4-Point Fas-Trac Suspension	6-Point Fas-Trac Suspension
White	10034088	10034097
Blue	10034089	10034098
Yellow	10034090	10034099
Green	10034093	10034102

Replacement Parts And Accessories

Replacement Suspensions

4-Point Fas-Trac Suspension ($6^1/_2$–8)	10034966
6-Point Fas-Trac Suspension ($6^1/_2$–8)	10034967

Accessories

Faceshield Frames

Defender + Faceshield Frame for Advance Cap (not equipped with lockdown clip)	10021616

Visors*

Visor Type	Color	Size (inches)	Part No.
Proprionate visor	Clear	8 x 15$^1/_2$ x .060	10005883
Polycarbonate visor (formed)	Clear	8 x 16 x .060	488132
Nitrometer visor (formed)	Clear polycarbonate	6 x 16 x .040	488126

Chinguard

Chinguard for Nitrometer visor—black	10022242

Hearing Protection

HPE cap model (26 NRR), complete with brackets	10061272
EXC cap model (24 NRR), complete with brackets	10061230
XLS cap model (22 NRR), complete with brackets	10061535
Sound Blocker 26 (26 NRR) for use with Defender + Frame	10026398

Sun Shield

Advance Sun Shield, polyurethane (front portion is Lexan, smoke tint)	10039114

Topgard® Protective Caps and Hats

*Topgard®
Protective Cap*

*Topgard®
Protective Hat*

Lightweight, durable Topgard slotted Caps and non-slotted Hats are built for use by utilities and other industries where head protection from falling objects is necessary, along with good dielectric properties (non-conduction of electrical current). Limited resistance to top impact or penetration is retained through a wide range of temperatures.

Topgard Caps and Hats meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003 and CSA Z94.1-2005, Class E (electrical—high voltage).

Topgard Caps and Hats are not specifically designed to protect against lateral blows from the front, side or rear. MSA's Vanguard Type II protective helmets are so designed and must be used if lateral protection is desired. For more information, contact your local MSA distributor.

Third-party certified by:

For more complete information, see Data Sheet 06-00-02.

For Cap and Hat Accessories, see pp. 118–123.

Topgard Assemblies

Color	Topgard Slotted Cap		Non-slotted Topgard Hat	
	w/ 1-Touch	w/ Fas-Trac	w/ 1-Touch	w/ Fas-Trac
White	454728	475385	454719	475393
Yellow	454721	475378	454712	475387
Gray	454722	475379	454713	•
Blue	454723	475380	•	•
Orange	454725	475382	•	•
Green	454726	475383	•	•
Red	454727	475384	•	•
Bright Orange	•	804396	•	804397
White w/lb & ch	448914	•	•	•

Replacement Suspensions

Standard Size 1-Touch Suspension (6½–8) for Topgard Cap or Hat	10061127
Standard Size Fas-Trac Suspension (6½–8) for Topgard Cap or Hat	473333
Swing Fas-Trac Suspension (6½–7⅝) for Topgard Cap or Hat	816648

Hearing Protection—Sound Control™ Cap Models

HPE cap model, complete with brackets (NRR 26 dB)	10061272
EXC cap model, complete with brackets (NRR 24 dB)	10061230
XLS cap model, complete with brackets (NRR 23 dB)	10061535
Sound Blocker 26 cap model (NRR 26), for use with Defender+ Faceshield Frame	10026398

Faceshield Frames

Defender+ Easy Release Frame for Topgard cap with lockdown clip, black	10080784
Non-locking Defender+ Easy Release Frame, black	10080785

Topgard® HTE Protective Caps

Lightweight, durable Topgard HTE slotted Caps are built for use by industries where elevated temperature, Class E head protection is necessary. Limited resistance to top impact or penetration is retained through a wide range of temperatures.

Topgard HTE Caps meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003, CSA Z94.1-2005, Class E (electrical—high voltage) and NFPA 70E.

Topgard HTE Caps are not specifically designed to protect against lateral blows from the front, side or rear. MSA's Vanguard Type II protective helmets are so designed and must be used if lateral protection is desired. For more information, contact your local MSA distributor.

Third-party certified by:

For Cap Accessories, see pp. 118–123.

Topgard HTE Assemblies

	White	Yellow	Red	Orange	Gray
Fas-Trac Suspension	10074904	10074903	10074905	10074907	10086434

Replacement Suspension

Standard Size Fas-Trac Suspension (6½–8) for Topgard Cap or Hat	473333

Defender + Faceshield Frames for Slotted Caps (Less Visor)

Defender + Faceshield Frame for Topgard Caps with lockdown clip	10021615
Defender + Faceshield Frame, elevated temperature (polycarbonate) (replaces Tempgard)	10031191

Arc Shield Visor and Nomex Chinstrap
For protection from electric arcing. Call for protection level. Meets ANSI Z87 and NFPA 70E, Class 2.

Color	Material	Size (inches)	Part No.
Tinted (light green/brown) – HIGH IMPACT, 10 Cal	propionate	10 x 20 x .060	10006024
Tinted (light green/brown) complete w/chinguard, 14 Cal – **basic Z87.1**	propionate	6 x 20 x .060	10063107
Nomex chinstrap with nylon hooks (attaches to the shell)			10003127

Thermalgard® Protective Caps

*Thermalgard®
Protective Cap*

Thermalgard with swing-ratchet suspension

Thermalgard Slotted Caps are lightweight, high-strength helmets intended for use where workers may need a helmet with elevated temperature capability. The injection-molded, rivetless shell of glass-reinforced nylon has a beaded edge for improved rigidity. Slots in the cap provide for mounting hearing protection muffs, welding shields, and faceshields. Thermalgard Caps meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003 , Class G (electrical—low voltage). The Thermalgard Cap also meets CSA Z94.1-2005 (Class G).

Thermalgard Caps are not specifically designed to protect against lateral blows from the front, side or rear. MSA's Vanguard Type II protective helmets are so designed and must be used if lateral protection is desired. For more information, contact your local MSA distributor.

For Cap Accessories, see pp. 118–123.

Third-party certified by:

SEI
SAFETY
EQUIPMENT
INSTITUTE

Thermalgard Assemblies

Color	w/ 1-Touch Susp.	w/Fas-Trac Susp.
Yellow	486964	486959
White	486965	486960
Red	486966	486961
Orange	486967	486962
Blue	486968	486963
Gray	•	487677
Bright Orange	800359	800360
Green	487399	814343

Replacement Suspensions

Std size 1-Touch Suspension (6½–8)	10061127
Std size Fas-Trac Suspension (6½–8)	473333
Std size Fixed Crown Suspension (6½–7⅝)	82797
Swing Fas-Trac Suspension (6½–7⅝)	816648

Hearing Protection—Sound Control™ Cap Models

HPE cap model, w/brackets (NRR 27 dB)	10061272
EXC cap model, w/brackets (NRR 24 dB)	10061230
XLS cap model, w/brackets (NRR 22 dB)	10061535
S/B 26 cap model (NRR 26), for use with Defender + Faceshield Frame **only**	10026398

Skullgard® Protective Caps and Hats

*Skullgard®
Protective
Cap*

*Skullgard®
Protective
Hat*

Skullgard with swing-ratchet suspension

Skullgard Caps and Hats feature heavy-duty construction for use in steel mills and other heavy industries where elevated temperatures are common. Skullgard Caps and Hats meet or exceed the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003, Class G (electrical—low voltage).

Third-party certified by:

SEI
SAFETY
EQUIPMENT
INSTITUTE

Skullgard Assemblies

	Skullgard Cap			Skullgard Hat	
	Staz-On	Fas-Trac	Swing-Ratchet	Staz-On	Fas-Trac
Natural tan	454617	475395	816651	454664	475407
White	454618	475396	•	454665	475408
Yellow	454619	475397	•	454666	•
Red	454620	•	•	•	•
Green	454621	•	•	454668	•
Grey	454622	•	•	•	•
Blue	454623	•	•	•	•
Orange	454626	•	•	454673	•
Hi-Viz Red/Orange	458702	•	•	•	•

Alternative Skullgard Assemblies

Large Skullgard Cap with Staz-On suspension, natural tan	82018
Large Skullgard Cap with Fas-Trac suspension, natural tan	475405
Standard Skullgard Cap with Staz-On suspension, **lamp bracket and cord holder**, natural tan	460409
Skullgard Hat with Staz-On suspension, **lamp bracket and cord holder,** natural tan	460389
Skullgard Cap with Fas-Trac suspension, Welder's Lugs, natural tan	482002

Metal Foldback Faceshield Frame for Skullgard Cap ONLY

Frame, less visor	10079072

Replacement Suspensions

Size	Staz-On	Fas-Trac	Fixed-Crown®	Swing Fas-Trac	1-Touch
Std (6½–8)	454231	473334	79717 (6½–7⅝)	816654 (6½–7⅝)	10061128
Large (7–8½)	468096	478454	—	—	—

Vanguard™ II Helmets for Lateral Protection and Emergency Response

Vanguard II Helmets are designed to provide limited impact and penetration protection in the event of a top or lateral blow to the head. Compliant with test requirements of ANSI Z.89.1-2003 and CAN/CSA Z94.1-2005 Class E for Type II helmets.

Custom imprinting and striping available.

Vanguard II (polyethylene) Complete Assemblies
with Fas-Trac Ratchet Suspension

Yellow	White	Red	Blue	Hi-Viz Orange
804939	804940	804944	804946	804947

Replacement Suspension

Fas-Trac Suspension for Vanguard Helmets only (6$\frac{1}{2}$ in–8 in)	804631

Chinstraps

Two-point chinstrap	804630
Three-point chinstrap (for maximum retention)	804629

Defender® + Foldback Faceshield Frame (Plastic)

The Foldback Faceshield Frame with visor, for use with Vanguard Helmets only, provides limited eye and face protection.

Defender + Universal Foldback Faceshield Frame—attaches with band (visor not included)	10016742

Visors (certified to CSA Z94.3 and meet ANSI Z87.1-2003)

Polycarbonate visor, clear (flat), 8 x 15$\frac{1}{2}$ x .040 in.	10017934
Propionate visor, clear, 8 x 15$\frac{1}{2}$ x .060 in.	10005883
Arc Shield Visor*, light green tint (for electrical arc protection), 10 Cal	10006024

*Arc Shields meet NFPA 70E, Class 2.

⚠ WARNING

Use only MSA's Fas-Trac Suspension designed for Vanguard II Helmets. Use of any other suspension will reduce the energy-absorbing ability of the protective helmet, which can result in serious personal injury or death.

Canadian Super-V™ Helmets for Lateral Protection

Canadian Super-V Helmets consist of a shell, foam liner, and suspension system working together to provide limited impact and penetration protection in the event of a top or lateral blow to the head, as well as limited protection against contact with high-voltage conductors. Representing the latest generation of protective headwear, Canadian Super-V Helmets are tested for both top and lateral blows. The Super-V Helmet is certified to the CAN/CSA Z94.1-2005 standard, Class E for Type II helmets and meets all applicable requirements of ANSI Z89.1-2003 for a Type I helmet (Class E.)

Super-V Assemblies

Complete with Fas-Trac Suspension and Foam Liner

White	C217091
Yellow	C217093
Blue	C217092
Orange	C217094
Red	C217095
Green	C217096
Navy Gray	C217097
Gold	C217098
Black	C217140
Silver	C217099
Hi-Viz Orange	C217100

Replacement Suspension

Fas-Trac suspension for Super-V Helmet only (6$\frac{1}{2}$-8)	818276

Defender® + Faceshield Frame

Defender + Faceshield Frame—(not equipped with lockdown clip)	10021616

Visors (certified to CSA Z94.3 and meet ANSI Z87.1-2003)

Polycarbonate visor, clear (flat), 8 x 15$\frac{1}{2}$ x .040 in.	10017934
Propionate visor, clear, 8 x 15$\frac{1}{2}$ x .060 in.	10005883
Arc Shield Visor*, light green tint (for electrical arc protection), 10 Cal	10006024

Ear Muff Accessories

HPE cap model, complete with brackets	10061272
XLS cap model, complete with brackets	10061535
Sound Blocker™ 26 (26 NRR) **for use with Defender + Frame**	10026398

*Arc Shields meet NFPA 70E, Class 2.

⚠ WARNING

Use only MSA's Fas-Trac Suspension designed for Super-V Helmets. Use of any other suspension will reduce the energy-absorbing ability of the protective helmet, which can result in serious personal injury or death.

Comfo-Cap® Protective Headwear

Designed for work in low-ceiling areas

The Comfo-Cap Protective Cap is widely used in the mining industry for head protection. Made of lightweight, tough polycarbonate plastic, the shell helps resist top impacts. Molded cross ridges on the crown provide increased strength and rigidity.

Comfo-Cap Protective Headwear meets or exceeds the applicable requirements for a Type I helmet (top impact) as outlined in ANSI Z89.1-2003, Class G (electrical–low voltage).

Note: The Comfo Cap is not specifically designed to protect against lateral blows from the front, side or rear. MSA's lateral protective helmets are so designed and must be used if lateral protection is desired. For more information, contact your MSA distributor.

Comfo Cap Assemblies

	White	Blue	Yellow	Orange	Red	Green	Black
Staz-On Suspension	91522	91586	91585	91589	91590	91584	82769
Fas-Trac Suspension	475336	•	•	•	•	•	•

Replacement Suspensions

Staz-On Suspension (6$\frac{1}{2}$ – 8)	454231
Fas-Trac Suspension (6$\frac{1}{2}$ – 8)	473334
1-Touch Suspension (6$\frac{1}{2}$ – 8)	10061128

Attachments

Lamp Bracket (for all MSA helmets), **must be screwed on** (Class C)	15244
Cord Holder (for all MSA helmets), **must be screwed on** (Class C)	85277
Chinstrap—attaches to suspension	81329

Bump Caps

The bump cap is designed for applications in workplaces such as meat packing, food processing, pest control, meter reading, and automotive repair. It protects the scalp by reducing exposure to abrasions and lacerations caused by minor bumps to the head. The key word is "minor" bumps. Bump caps are appropriate ONLY for work situations which do NOT require ANSI-compliant head protection. Contact MSA if ANSI-compliant head protection is needed.

Features & Benefits
- Plastic cap: Provides scalp covering to reduce exposure to abrasions and lacerations due to minor bumps
- Molded from high-density polyethylene: Durable
- Perforated sides: Allows cross ventilation for better air circulation
- Adjustable sizing 6$\frac{1}{2}$ to 8: Accommodates different head sizes, easy to use
- Cool and lightweight: Comfortable
- Smooth surface: Easy to clean
- No replacement parts

Custom Imprinting
- One-color imprinting available

Applications
- Designed for work in areas such as pest control, meter reading, food/beverage processing, meat packing, auto repair.

⚠ WARNING

These bump caps are NOT safety helmets and do NOT meet OSHA nor ANSI requirements for head protection. DO NOT USE as sport safety helmet. DO NOT USE when ANSI-compliant head protection is required or needed.

Plastic Bump Caps

Color	Part Number
Blue	10033650
Yellow	10033651
White	10033652
Red	10033653
Orange	10033654
Dark green	10033655
Accessories	
Faceshield Frame	10016742
Visor, clear 8 x 15$\frac{1}{2}$ x .040 polycarbonate	10017934

Plastic Bump Cap with Faceshield Frame and Visor

Faceshield Frames

Defender® + Faceshield Frame for Slotted Caps

The Defender + Faceshield Frame for slotted caps is available in three versions (see details in ordering information below). Features of the Defender + Frame include:

- Front-drip-edge splash protection.
- Unlimited number of lift stop positions.
- Long-lasting O-ring pivot-joint design.
- Snap-in ear muff option.
- Easy in, easy out visor replacement.
- Optional cap lockdown clip (V-Gard and Topgard cap models only).

Defender + Frame

Defender + Frame ,
Sound Blocker 26 Muff Assembly

Defender + Faceshield Frames for Slotted Caps (Less Visor)	
Defender + Faceshield Frame for V-Gard Caps with lockdown clip	10021614*
Defender + Faceshield Frame for Topgard Caps with lockdown clip	10021615
Defender + Faceshield Frame for all MSA Slotted Caps, not equipped with lockdown clip	10021616
Defender + Faceshield Frame, elevated temperature (polycarbonate) (replaces Tempgard®)	10031191
Ear Muff Accessory for Defender + Frame	
Sound Blocker 26 (26 NRR) (includes clips)	10026398

*Meets CSA Z94.3.

Approvals

All MSA Faceshield Assemblies and Visors meet the applicable requirements of ANSI Z87.1-2003.

⚠ CAUTION

All faceshield assemblies must be worn with Z87.1 high impact eye protection such as spectacles or goggles.

Defender + Foldback Faceshield Frames (Plastic and Metal)

Plastic Defender + Foldback Faceshield Frames (Cap on Left, Hat on Right)

Metal Defender + Foldback Faceshield Frames (Cap on Left , Hat on Right)

FoldbackFaceshield Frames come in plastic (dielectric) and metal. Both plastic and metal frames come in cap and hat models. These frames can be used with slotted or non-slotted helmets. All frames come without visors.

Defender + Foldback Faceshield Frames (Plastic and Metal) (Less Visor)	
Plastic (Dielectric) Defender + Universal Foldback Faceshield Frames	
Cap, less visor	10016742
Hat, less visor	10005383*
Metal Defender + Universal Foldback Faceshield Frames	
Cap, less visor	488160
Hat, less visor (works with all MSA helmets except Topgard)	488159
Cap, special frame for Skullgard cap ONLY	10079072

*Meets CSA Z94.3.

⚠ WARNING

Do not use metal Foldback Faceshield Frame in electrical applications. Failure to follow this warning can result in serious injury or death.

Approvals

All MSA Faceshield Assemblies and Visors meet the applicable requirements of ANSI Z87.1-2003.

⚠ CAUTION

All faceshield assemblies must be worn with Z87.1 high impact eye protection such as spectacles or goggles.

New!

Defender + Easy Release Faceshield Frame

- To be used only with MSA slotted cap muffs
- Front drip-edge splash protection
- Unlimited number of stop positions
- Long-lasting, O-ring, pivot-joint design
- Easy-in, easy-out visor replacement
- Optional cap lockdown clip (V-Gard, Topgard and SmoothDome Cap cap models only).

Easy Release Frame with XLS Hearing Protection

Chip Arrester (Optional)

Wearers can choose the optional bright orange stretch nylon Chip Arrester with elastic. The Chip Arrester attaches to the frame on five points and helps to keep debris from falling behind the frame when the frame is raised over the hardhat.

Chip Arrester

Defender + Easy Release Faceshield Frames (Less Visor)	
Defender+ Easy Release Frame for standard V-Gard cap, with lockdown clip, Black	10080783
Defender+ Easy Release Frame for Topgard cap with lockdown clip, Black	10080784
Non-locking Defender+ Easy Release Frame, Black	10080785
Defender+ Easy Release Frame for standard V-Gard cap with lockdown clip, Hi-Viz Orange	10080786
Chip Arrester (Optional)	
Chip Arrester, Hi-Viz orange	10080794

Easy Release Frame with HPE Hearing Protection and Chip Arrester

Approvals

All MSA Faceshield Assemblies and Visors meet the applicable requirements of ANSI Z87.1-2003.

⚠ CAUTION

All faceshield assemblies must be worn with Z87.1 high impact eye protection such as spectacles or goggles.

Defender + Faceshield Assemblies
No Hardhat Required – Meet Z87.1-2003

Defender + Assembly with Visor and Chinguard (Nitrometer)

Defender + Assembly with Ratchet and Extended High-Temp Sparkgard

Use where no hard hat is required. They are available in three versions and all adjust to head sizes 6 1/2 to 8. The extended high-temp Sparkgard is for use in temperatures up to 250°F.

Defender + Faceshield Assemblies (Less Visor)	
Defender + Faceshield Assembly, standard Sparkgard, pin-lock suspension , less visor	10021610
Defender + Faceshield Assembly, standard Sparkgard, ratchet suspension , less visor	10021611*
Defender + Faceshield Assembly, extended Polycarbonate Sparkgard [for Elevated-Temp], ratchet suspension, less visor	10021612

*Meets CSA Z94.3.

Approvals

All MSA Faceshield Assemblies and Visors meet the applicable requirements of ANSI Z87.1-2003.

⚠ CAUTION

All faceshield assemblies must be worn with Z87.1 high impact eye protection such as spectacles or goggles.

MSA Visors

Choose from a wide variety of visors that fit easily on MSA faceshield frames.

Visors should always be worn with primary eye protection such as high impact-resistant spectacles or goggles. Visors should be inspected frequently and replaced immediately if worn, scratched, or damaged in any way. Selection of proper models for specific hazards and communication of all instructions, precautions, and limitations to the wearer is the responsibility of user safety specialists, who are also responsible to see that they are strictly observed. Failure to comply with any of the above could result in serious injury or death.

Approvals

Most MSA Visors meet or exceed applicable requirements of ANSI Z87+ (high impact).

⚠ CAUTION

Maintenance: clean visor with mild soap and water. Cleaning dry or with coarse cloth will scratch the visor.

⚠ WARNING

Do not use MSA visors for welding, elevated temperature applications, or for protection against other infrared radiation sources unless the MSA visor is approved for such applications. Do not use for sports, simulated war games, paintball games, or similar activities. A pitted or scratched visor reduces eye protection and vision. Inspect routinely and replace worn or damaged parts immediately. Do not alter or modify this product. Do not use near open flame. Failure to follow these warnings can result in permanent impairment of sight, other serious personal injury, or death.

MSA Visors

Polycarbonate Visors

Color	Size (inches)	Part No.
Clear (Molded)	10 x 20 x.060	10063106
Clear (Formed)	8 x 16 x .040	488131
Clear (Formed)	8 x 16 x .060	488132
Clear (Flat)	8 x 15$\frac{1}{2}$ x .040	10017934*
Clear (Formed)	8 x 19 x .060	488138
Clear (Formed)	6 x 16 x .060	491908
Clear (Fog-free)	8 x 16 x .040	802337

Propionate Visors

Color	Size (inches)	Part No.
Clear	8 x 15$\frac{1}{2}$ x .060	10005883*
Dark Green	8 x 15$\frac{1}{2}$ x .060	10005885
Shade 5 (green) – **basic Z87.1**	8 x 15$\frac{1}{2}$ x .060	10005882

Nitrometer Visors and Chinguards

Visors

Color	Size (inches)	Part No.
Clear polycarbonate	6 x 16 x .040	488126
Clear polycarbonate (fog free)	8 x 19 x .060	494916

Chinguards for Nitrometer Visor

Color	Part No.
Clear polycarbonate	10022241
Black polypropylene	10022242

Other Nitrometer Visors and Chinguards

Color	Size (inches)	Part No.
Shade #5, green, propionate – **basic Z87.1** (must be worn with chinguard)	6 x 16 x .060	10005881
Chinguard, polycarbonate (for use only with visor P/N 10005881)		10013631

Wire Screen Visors (Basic Z87.1)

Color	Size (inches)	Part No.
Plastic edge, 20 mesh (not for use in elevated temperatures)	6$\frac{1}{2}$ x 14	476356
Aluminum edge, 20 mesh	8 x 17$\frac{1}{2}$	457409

Arc Shield Visor For protection from electric arcing. Call for protection level. Meets ANSI Z87 and NFPA 70E, Class 2.

Color	Material	Size (inches)	Part No.
Tinted (light green/brown) – HIGH IMPACT, 10 Cal	propionate	10 x 20 x .060	10006024
Tinted (light green/brown) complete with chinguard, 14 Cal – **basic Z87.1**	propionate	6 x 20 x .060	10063107

Elevated-Temperature Visors

Color	Coating	Material	Size (inches)	Part No.
Clear	gold	polycarbonate	9$\frac{1}{2}$ x 20 x .070	10005879
Medium green tint	gold	polycarbonate	9$\frac{1}{2}$ x 20 x .070	10005880

*Meets CSA Z94.3.

Cap and Hat Accessories

Hearing Protection—Sound Control™ Cap and Hat Models

EXC cap model *HPE cap model* *XLS cap model* *Soprano Muff for hats*

Sound Control Cap Models are designed for easy attachment to slotted MSA Caps and help to reduce the effects of excessive noise. **HPE, EXC, XLS Noise Reduction Rating may vary depending on MSA helmet used.**

Sound Control Cap and Hat Models	
For use with Slotted Caps Only	
HPE cap model complete with brackets	10061272
EXC cap model complete with brackets	10061230
XLS cap model, complete with brackets	10061535
For use with Non-Slotted Caps Only (Comfo/Skullgard Caps)	
Sound Blocker 26 cap model (NRR 26)	10022021
For use with all Full-Brimmed Hats	
Soprano Muff Kit for Full Hats (NRR 25)	10034487
For use with Defender + Faceshield Frame	
Sound Blocker 26 cap model (NRR 26)	10026398

Helmet Lights and Slot Adapters

Stealthlite & Light Holder for Slotted Caps *VersaBrite II Light*

MSA offers three helmet lights that fit into our special cap or hat adapters. All of the lights are FM and CSA-approved for intrinsic safety, and are non-incendive.

Helmet Lights and Slot Adapters	
VersaLite Helmet Light with 2 AA alkaline batteries	697259
Stealthlite Helmet Light (batteries not included)	697261
VersaBrite II Helmet Light with 2 AA alkaline batteries	697417
Light holder for slotted Cap—no metal parts	814322
Light holder for non-slotted Hat —May reduce the dielectric properties when bracket is attached.	814323
Helmet Light Replacement Parts	
Standard lamp module for the Versalite	697357
Standard lamp module for the Stealthlite	697356
Hi-Performance lamp module for the VersaBrite II	697418

Sun Shields

V-Gard Sun Shield *Topgard Sun Shield*

Sun Shield extends the brim all the way around to help protect wearer's ears and neck from sun's rays. Made of polyurethane (front portion is Lexan, smoke tint).

Sun Shields	
Sun Shields for V-Gard Caps and Hats	
Sun Shield for Standard V-Gard Cap only	697290
Sun Shield for V-Gard Hat only	697410
Sun Shield for Advance Cap	
Sun Shield for Advance Caps only	10039114
Sun Shields for Topgard Caps and Hats	
Sun Shield for Topgard Cap only	697373
Sun Shield for Topgard Hat only	697410
Sun Shields for Vanguard II Caps	
Designed for Vanguard II only	10005886

Goggle Retainers

MSA's Goggle Retainers are designed for applications where goggles must be worn with helmets. The non-metallic retainer can be worn on most MSA protective headwear meeting ANSI Z89.1 requirements without changing the headwear's dielectric qualifications (protection against electric shock) as long as goggle used is dielectric.

Chinstraps

Custom Terri-Band Sweatband

Custom design fits all MSA helmets. Washable and has plastic snaps.

Other Cap and Hat Accessories	
Custom Terri-Band Sweatband **(single)**	10068911
Custom Terri-Band Sweatband **(pkg of 10)**	696688
Goggle Retainer for protective caps, less goggles	459458
Goggle Retainer for protective hats, less goggles	449895
Chinstrap, plastic (attaches to the shell)	88128
Chinstrap, elastic (attaches to the suspension)	81391
Two-point chinstrap (for **Vanguard II** only)	804630
Three-point chinstrap (for **Vanguard II** only)	804629
Hard hat rack for back of car seat	696389

Head, Eye, Face and Hearing Protection

Adapter Kits for Welding Shields and Defender® + (Plus) Assembly
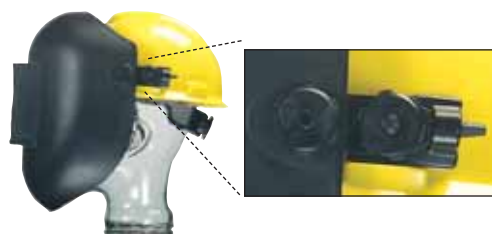
Plastic Instant-Release for Welding Helmet
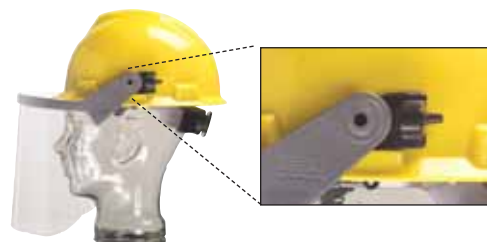
Defender + Faceshield Frame with Instant-Release

Kits permit the easy attachment of Welding Shields and SparkGard Faceshields with visors to MSA's helmets.

EC Adapter (left) and Sparkgard (right)—use plastic or metal Instant-Release with Sparkgard

Metal Instant-Release Attachment

Welding Adapter Kits	
Standard Adapter for Welding Helmets and Sparkgards	488525
EC Adapter Kit (positive positioning type)	806211
Sparkgard only	456568
Plastic Instant-Release Attachment*	
Instant-Release and lugs for slotted caps	10036456
Instant-Release, less lugs, for slotted caps	10039111
*Note: Cannot be used on Vented Advance Caps.	
Defender+ Frame with Instant-Release Attachment	
Defender + frame for slotted cap, without lock-down	10037098
Metal Instant-Release Attachment	
Instant-Release and lugs for slotted caps (A, B, C, D, E, F, H)	485460
Lugs only, for instant-release slotted caps (H)	468771
Instant-Release and lugs for non-slotted caps, with stop (A, B, C, D, E, F, G)	91385
Lugs only, for instant-release non-slotted caps (G)	48733
Instant-release, less lugs, with stop (A, B, C, D, E, F)	456667
Friction joints, pair (A, D, E, F)	93631
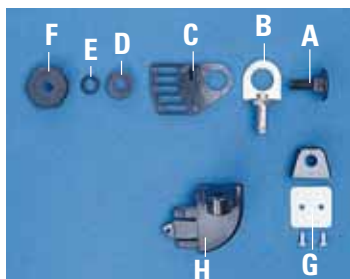
Instant-Release Attachment

Welding Shields, Goggles and Accessories

MSA's thermal plastic welding shields protect a worker's eyes and face from infrared burns, flying sparks, hot metal spatter and chips encountered in welding operations. The nylon welding shields come in a variety of styles. When protection from overhead hazards is required.

For shade 5 welding visors, see p. 120.

For shade 5 welding spectacles, see p. 128.

Sightgard Welding Plates

Polycarbonate Plates

Meet ANSI Z87.1 2003 (high impact).

Plate Size (in.)	Shade	Part No.
2 x 4¹/₄	5	791923
2 x 4¹/₄	10	791928
2 x 4¹/₄	12	791930
4¹/₂ x 5¹/₄	10	38347
4¹/₂ x 5¹/₄	12	38277

Polycarbonate Cover/Back Plates

Plate Size (in.)	Shade	Part No.
2 x 4¹/₄	clear	791933
4¹/₂ x 5¹/₄	clear	696095

Welding Shields—Fronts Only

Less headgear and attachments.

Plate Size 2" x 4¹/₄"	Part No.
Non-coated black, slim-line, lift front	695943
Non-coated black, full-curved, lift front	695946
Coated silver, slim-line, lift front	695890
Coated silver, slim-line, coated lift front	695941
Coated silver, full-curved, lift front	695889
Plate Size 4¹/₂" x 5¹/₄"	**Part No.**
Coated silver, slim-line, fixed front	695888

ClearCommand® HCS Helmet Communication System

The Helmet Communication System from MSA is a state-of-the-art radio interface device which significantly improves the user's ability to receive and send messages even in loud ambient-noise environments. It goes wherever you go. The system consists of a helmet-mounted microphone and ear speaker assembly that weighs 5.3 ounces and easily snaps onto the user's industrial-style helmet's ratchet suspension.

Helmet Mic with Stand-Alone PTT

Helmet Mic with Lapel Mic

Features and Benefits

- Easily snaps onto the ratchet suspension of industrial-style helmets. The unit can be easily transferred to other users, and no tools are required for removal.
- The bone-conduction microphone is made of soft silicone material, which makes it comfortable to wear, with no pressure points.
- The helmet microphone assembly can be reversed on the helmet suspension to position the ear speaker on either ear.
- The helmet mic system, when used with the lapel mic or PTT, is powered by the battery from the radio. No need to replace or re-charge dry cells.

Winter Liners

Regular Zero Hood Liner

Extended Zero Hood Liner

Flame-retardant Zero Hood Line

Flame-resistant Zero Hood Liner, Velcro Closure

Zipper -type Zero Hood Liner

Knit Cap Liner

Stretch Winter Liner

Economy Liner

Extended-Neck Liner

Standard Winter Liner

Extra-Warm Quilted Fleece Liner

Standard Winter Liners	
Regular One-piece, two-ply Zero Hood® Liner	
Standard—Velcro adjustable chinstrap and no metal parts	86092
Extended-neck Zero Hood Liner	
One-piece, two-ply winter liner; extended neck tucks into coat or jacket collar; nonmetallic Velcro-adjustable chinstrap	88587
Flame-retardant Zero Hood Liner	
Standard—For use in high-heat areas or around flames; durable flame-retardant cotton with Nomex binding and chinstrap; does not contain any metal parts. Meets Fed Spec #191 Method 5903	802439
Flame-resistant two-piece Velcro closure Zero Hood Liner	
No metal parts; the two pieces are joined by non-metallic Velcro closures; knit ear lugs with Velcro closure	696473
Zipper-type Zero Hood Liner with knit lugs to fit over ear muffs	
Two-button front, ribbed-knit neckpiece attaches by metal zipper to crown-piece; knit ear lugs will fit over noise-attenuating ear muffs. [Caution: Liners that contain metal parts will have an effect on electric classifications.]	10087241*
Knit Cap Liner	
No chinstrap or other attachment; made of Orlon material [Caution: Should not be used around open flames, sparks or molten metal.]	34929
Stretch Winter Liner	
Mounts over the brim of a hard hat but can be adjusted to cover the neck and ears; made of Orlon material. [Caution: Should not be used around open flames, sparks or molten metal.]	695350
EC Winter Liners	
Economy Liner	
Flame-retardant shell w/soft-napped interior; adjustable Velcro chinstrap; and three-button loop straps	697116
Standard Winter Liner	
Universal size. Two-ply liner w/flame-retardant shell; soft lining; adjustable Velcro chinstrap; and three-button loop straps	697117
Extended-Neck Liner	
Extended-neck; two-ply liner w/flame-retardant shell; soft lining; adjustable Velcro chinstrap; and three-button loop straps	697118
Extra Warm Quilted Fleece Liner	
Green nylon tricot shell; quilted w/foam; soft fleece lining	697119

NEW part number SAME great product

*P/N 10087241 replaces P/N 455930.

Sightgard® Single Lens Goggles

Softframe Single Lens Goggles

Softframe Perforated Single Lens Goggles

Softframe 4-Vent Single Lens Goggles

Softframe Goggles effectively fit most facial contours. Large, one-piece, .060-inch-thick polycarbonate lens provides wide, undistorted field of vision. Optional Anti-Fog Coated Lenses are available for work involving high humidity, temperature changes or greater worker exertion. The scratch-resistant coating is unaffected by most organic solvents, ammoniacal and alkaline detergents.

Approvals

Softframe, Clearvue, Respirator, and Rubber Frame Goggles by MSA meet all applicable requirements of ANSI Z87.1-2003—high impact (except Wire Screen Goggles).

Goggle Retainers

Sturdy neoprene-rubber accessory can be used with any protective cap or hat. Retains goggle on headwear when not in use and holds goggle securely when worn for eye protection.

Sightgard Single Lens Goggles						
Type	Frame Color	Frame Style	Lens Type	Headband	P/N	Z87
Softframe	Clear	Perforated	Standard	Elastic	695847	High Impact
Softframe	Clear	Perforated	Anti-Fog	Elastic	695850	High Impact
Softframe	Clear	4-Vent	Standard	Elastic	695848	High Impact
Softframe	Clear	4-Vent	Anti-Fog	Elastic	695851	High Impact
Softframe	Clear	Nonvented	Anti-Fog	Elastic	695852	High Impact
Wire Screen	N/A	Nonvented	Wire	Elastic	695932	Basic
Respirator	Clear	4-Vent	Anti-Fog	Elastic	461027	High Impact
Rubber Frame	Clear	4-Vent	Acetate Standard	Rubber	791072	High Impact
Clearvue 200*	Clear	Indirect Vent	Anti-Fog	Elastic	696776	High Impact
Goggle Retainers						
Goggle Retainer only, for Protective Caps						459458
Goggle Retainer only, for Protective Hats						449895

*Meets CSA Z94.3.

Respirator Goggles

Softframe 4-vent Respirator Goggles by MSA are specially constructed to wear with MSA respirators and have a .060-inch-thick anti-fog clear lens.

Clearvue® 200 Goggles

These goggles feature an integrated-frame design and a flexible, rolled-in cushion at the temples which provides comfort without tension or pressure points.

Wire-Screen Goggles

Wire Screen Goggles feature a clear nonvented frame, wire lens, and elastic headband.

Rubber Frame Goggles

For use where fine dust in high-velocity concentration is a problem and where minor impact hazards exist.

The Sightgard® Line of Protective Eyewear

Sightgard Industrial Protective Eyewear is designed for protection against impact hazards and/or flying particles, dust, sparks, and glare. Sightgard Industrial Protective Eyewear provides excellent side- and front-impact protection while still being comfortable to wear. For more information, see Bulletin 0305-22-MC.

Approvals

All Sightgard Industrial Protective Eyewear meets ANSI Z87.1 – high impact. Selected eyewear meets CSA Z94.3 (indicated by *).

Easy-Flex™ Protective Eyewear
Flex for a Comfortable Fit

- 99% UV protection
- Polycarbonate lenses for high-impact protection
- Temples and frame flex to fit a wide variety of faces
- Hard-coated lenses
- A choice of clear, gray, amber, "180 blue" mirror and "sky orange" mirror lenses

Easy-Flex Protective Eyewear	
Easy-Flex, clear lens, blue-gray frame	10070917
Easy-Flex, gray lens, blue-gray frame	10070918
Easy-Flex, amber lens, blue-gray frame	10070919
Easy-Flex, "180 blue" mirror lens, blue-gray frame	10070920
Easy-Flex, "sky orange" mirror lens, metallic sand frame	10070921

Pyrenees™ Protective Eyewear

- Dual injection soft tip temples
- Available in several frame and lens colors
- Full side protection
- Meets Z87+ and CSA Z94.3.

Pyrenees Protective Eyewear	
Pyrenees, black frame, clear lens*	10033716
Pyrenees, black frame, gray lens*	10033717
Pyrenees, black frame, amber lens, AF*	10033740
Pyrenees, black frame, clear lens AF*	10033718
Pyrenees, black frame, gray lens, AF*	10033719

*Meets CSA Z94.3.

Arctic™ Elite Protective Eyewear

- Soft tip temples
- Padded nose bridge
- Lightweight
- A notch above the standard Arctics

Arctic Elite Protective Eyewear	
Arctic Elite, clear, AF	10038845
Arctic Elite, gray, AF	10038846
Arctic Elite, light gold indoor/outdoor lens	10059671

Head, Eye, Face and Hearing Protection

Aurora™ Protective Eyewear
- 9-base curved lens
- Spring-comfort adjustable nose bridge
- Soft-end temples
- Vertical temple adjustment
- Anti-fog replaceable lens (blue mirror, hard coat lens only)

Aurora Protective Eyewear	
With black frame.	
Clear anti-fog lens	10026005
Gray anti-fog lens	10026006
Amber anti-fog lens	10026007
Blue mirror anti-fog lens	10026008
Clear lens in deluxe eyewear pouch with spare Gray and Amber lens, cleaning cloth— Fire Service logo on lens and pouch	10034931

Back by popular demand!

MAG™ Series Protective Eyewear
Magnification Built Right In

- Full side protection
- Duel-injected soft tip temples
- A choice of three bifocal powers:1.5, 2.0 and 2.5
- Polycarbonate lens for high impact and 99.9 UV protection
- Ergonomic temples for better fit and comfort

MAG Series Protective Eyewear	
Mag 1.5 Clear lens, black frame and diopter strength of 1.5*	10068832
Mag 2.0 Clear lens, black frame and diopter strength of 2.0*	10065847
Mag 2.5 Clear lens, black frame and diopter strength of 2.5*	10068833

*Meets CSA Z94.3.

Voyager™ Protective Eyewear
- Full protection at a great price
- One-piece wrap around polycarbonate lens
- 99% UV protection
- Anti-fog lenses available
- Wide field of vision
- A choice of clear, gray and indoor/outdoor mirrored lenses

Voyager Protective Eyewear	
Voyager, clear lens*	10065848
Voyager, clear anti-fog lens*	10065849
Voyager, gray lens (UV 400 lens)*	10065850
Voyager, gray lens anti-fog (UV 400 lens)*	10065851
Voyager, indoor/outdoor mirrored lens*	10065892

*Meets CSA Z94.3.

Arctic™ Protective Eyewear
- Stylish cat's eye look
- Built-in side impact
- Tuff-Stuff™ anti-scratch lens coating
- Available with clear protection or gray-tinted lens/frame

Arctic Protective Eyewear	
Arctic, clear lens	697514
Arctic, gray lens	697515
Arctic, blue-mirrored lens	10008179

Vista™ Protective Eyewear

- 99% UV protection
- Polycarbonate lens for high impact protection
- Full protection at a great price
- One-piece lens
- Choice of clear, gray and indoor/outdoor lenses

Vista Protective Eyewear	
Vista, clear lens, metal gray temple	10070914
Vista, gray lens, metal gray temple	10070915
Vista, Indoor/Outdoor mirrored lens, brown copper temple	10070916

Alpine™ Protective Eyewear

- Lightweight
- 8 base curved lens
- Comfortable to wear
- Available in clear, gray, amber and indoor/outdoor lens
- Anti-fog lens available

Alpine Protective Eyewear	
Alpine, clear lens	10041818
Alpine, clear A/F	10041819
Alpine, gray lens	10041820
Alpine, light gold indoor/outdoor lens	10041823

Sierra™ Protective Eyewear

- Full eye protection
- Anti-fog lens (on some models)
- Tuff-Stuff™ scratch-resistant lens coating
- Teal green, black, blue or red/white/blue nylon frame
- Meets Z87+ and CSA Z94.3.
- Integrated side shields
- Vented brow guard
- Adjustable temples
- Clear, gray, indoor/outdoor light gold mirror, or amber lens available

Sierra Protective Eyewear	
Sierra, teal frame, clear anti-fog lens*	697505
Sierra, black frame, clear lens*	697550
Sierra, black frame, clear anti-fog lens*	10018662
Sierra, black frame, gray lens*	10010570
Sierra, black frame, gray anti-fog lens	10010572
Sierra, blue frame, clear lens	10023610
Sierra, blue frame, amber lens	10023611
Sierra, red/white/blue frame, clear lens	10012842
Sierra, red/white/blue frame, clear anti-fog lens	10012843

Sierra Small Faces Protective Eyewear	
Sierra, small faces, clear lens	10018440

Sierra™ Small Faces Protective Eyewear

- Suitable for small adult faces and for children
- Tuff-Stuff™ anti-scratch lens coating
- Adjustable temples
- High optical quality

*Meets CSA Z94.3.

Rx Overglasses

- Horizontal and vertical adjustable temples
- Limited lens curvature for the best optics
- Tuff-Stuff™ anti-scratch lens coating
- **Fit over most prescription eyewear**

Rx Overglasses	
Rx Overglasses, blue frame w/gray anti-fog lens	10012855
Rx Overglasses, clear anti-fog lens	10008175

Head, Eye, Face and Hearing Protection

Plant Visitor Protective Eyewear

- Fit over many prescription glasses
- Most economical model
- Integrated side shields
- Clear lens
- Boxes of 10 in dispenser-style container or bulk pack of 144
- Meets Z87+ and CSA Z94.3.

Plant Visitor Protective Eyewear	
Plant Visitor, clear lens, box of 10*	697500
Plant Visitor, clear, bulk box of 144*	10008174

*Meets CSA Z94.3.

Clearview™ Protective Eyewear

- Fit over many prescription glasses
- Integrated side shields
- Clear or Shade 5 lens (Shade 5 lens designed for welding and brazing applications where Shade 5 protection is recommended)
- Same as Plant Visitor specs except with Tuff-Stuff™ anti-scratch lens coating

Clearview Protective Eyewear	
Clearview, clear lens	697502
Clearview, black temples, shade #5 lens	10012847

Clear Lens

Shade #5 Lens

Luxor™ Protective Eyewear

- Tuff-Stuff™ scratch-resistant lens
- Black temples
- Soft nose pads
- Clear or gray-tinted lens
- One-piece wrap protection
- Adjustable temples
- Frameless design

Luxor Protective Eyewear	
Luxor, clear lens	697516
Luxor, gray lens	697517

Impression™ II Protective Eyewear

- Vertical and horizontal temple adjustments
- Extended cheek and brow protection
- Platinum colored temples
- Gray and clear anti-fog lens

Impression II Protective Eyewear	
Impression, clear anti-fog lens	10008177
Impression, gray anti-fog lens	10008178

Tradewind™ Protective Eyewear

- **Indoor-outdoor** light gold or clear lens
- Tuff-Stuff™ scratch-resistant lens coating
- Adjustable temples and integrated side shields
- Brow protection
- UV-400 protection (mirrored lens only)

Tradewind Protective Eyewear	
Tradewind, 2-tone temple, light gold lens	697506
Tradewind, all black temples, clear lens	10002545

Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010

MSA Sports Logo Safety Glasses

New!

Officially Licensed NFL Safety Glasses

- Employees can support their favorite team while wearing the needed protection
- Aurora® anti-fog, scratch-resistant lens for improved vision
- Rubber-tipped ratcheting temples for a comfortable custom fit
- Available in clear and gray lenses
- Meets or exceeds ANSI Z87.1 requirements for high impact standards
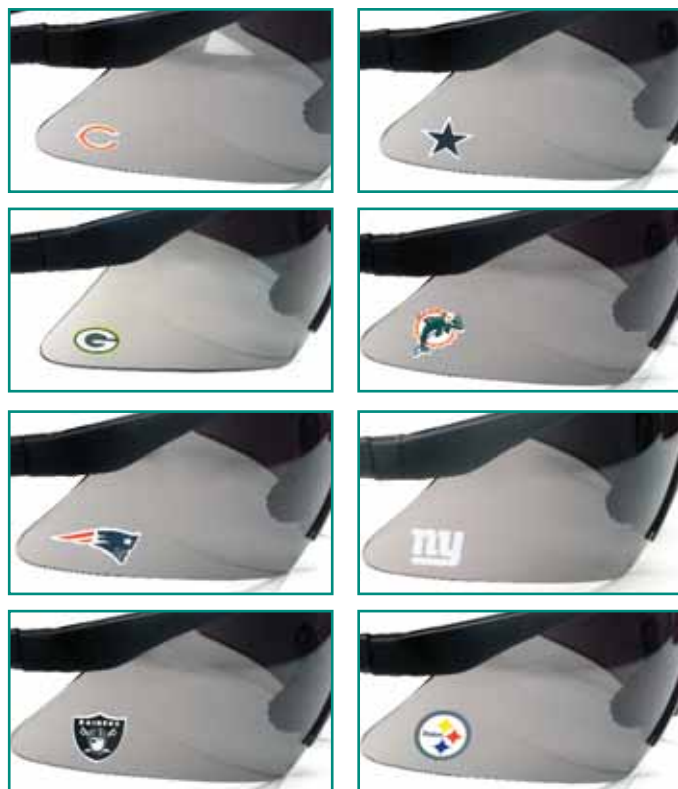
MSA Sports Logo Safety Glasses

The eight teams listed below are stocked. Other teams may be special ordered. Contact your MSA Safety Products Distributor for more information.

Team	Clear Lens	Gray Lens
Chicago Bears	10079147	10079246
Dallas Cowboys	10079150	10079249
Green Bay Packers	10079163	10079252
Miami Dolphins	10079168	10079257
New England Patriots	10079170	10079259
New York Giants	10079172	10079261
Oakland Raiders	10079174	10079263
Pittsburgh Steelers	10079176	10079265

Eye and Face Protection Accessories

Eyewear Lanyards

- Holds eyewear securely
- Use to rest eyewear on chest when not in use
- Standard model clips into holes in eyewear temple ends
- Deluxe model goes over temple ends

Top: Deluxe Lanyard

Bottom: Standard Lanyard

Eyewear Cleaning Accessories

Protective Eyewear Pouch

- Black nylon spectacle case fits MSA protective eyewear
- Nylon webbing belt loops allow for convenient storage
- Easy hook-and-loop fastener

Eye & Face Protection Accessories

Standard Eyewear Lanyard, black (pk/12)	10020872
Deluxe Eyewear Lanyard, black (pk/12)	10020871
Pre-Moistened Towelettes (box of 100)	10022087
4 oz. Fogpruf™ Cleaner Refill	13016
Deluxe Eyewear Pouch, black	10034943

Eyewear Display Unit

- Revolving
- High-quality ball-bearing design
- Holds 24 pairs of eyewear
- Includes mirror and promotion holder

Eyewear Display Unit

Revolving Eyewear Display Unit, less glasses	697518

SOUND CONTROL™

Passive Hearing Protection

Guarding workers against the daily hazards of noise is of paramount concern in countless industries. The challenge is to balance personal attenuation devices with comfort. A worker who takes off hearing protection to rub sore ears is a worker at risk. MSA provides a wide selection of hearing protection designed for the most demanding applications, offers protection with a variety of Noise Reduction Ratings, and does it with the benefits of style and comfort. Noise Reduction Rating (NRR) is third-party certified in accordance with ANSI S3.19-1974, EN352 and meets CSA Class A. Cap Model Noise Reduction Ratings listed below are for medium V-Gard helmets only. Noise Reduction Rating and Attenuation Values for MSA Topgard, Advance, Thermalgard, Vanguard II, Wildland T and Super-V slotted helmets may vary. Contact MSA for more information.

Passive Hearing Protection	
HPE—headband model	10061271
HPE—for slotted caps	10061272
Hygiene Kit for HPE, complete with cushions and inserts	10061291
EXC—headband model	10061229
EXC—for slotted caps	10061230
Hygiene Kit for EXC, complete with cushions and inserts	10061292
XLS—for slotted caps	10061535
Hygiene Kit for XLS, complete with cushions and inserts	10061537

HPE Muff (NRR – 26dB)
HPE Cap Model (NRR – 27dB)

Designed specifically for very high noise levels, the powerful Muff/Cap Model is ideal for airfields, power plants and other areas with intense noise. The HPE Muff/Cap Model provides the highest-rated protection available for low-frequency environments. A padded headband and super-soft ear cushions guarantee all-day comfort while ensuring full-time protection.

EXC Muff (NRR – 24dB)
EXC Cap Model (NRR – 25dB)

The ear muff is so comfortable that you always want to wear it. Unique injection molded inserts provide excellent attenuation and maximum space for the ears inside the cap. Headband model offers force adjustment for individual fit. The helmet-mounted version has a spring design that offers low pressure tension and a high level of comfort.

XLS Cap Model (NRR – 23dB)

Designed to fit comfortably under safety hardhats and faceshields, it features easy-to-remove ear cushions for quick cleaning and replacement. The XLS Muff offers agressive protection in low-moderate noise environments.

Soprano™ Muff (NRR-25dB) for Hats

Designed to fit all full brim hats, the Soprano Muff provides high-level hearing protection. (The Muff reduces helmet class to **Class "C".**)

Economuff™ Line

Economuff Earmuff (NRR – 20dB)

The Economuff Earmuff comes with the features you expect from MSA hearing protection. Comfortable ear pads ensure all-day wearing without fatigue, and the durable design provides protection in tough, dirty environments. Lightweight at just 8.0 ounces.

Economuff Multi-Position Earmuff
Over-the-Head (NRR – 24dB)

Behind-the-Head and Under-the-Chin (NRR – 23dB)

The Economuff Multi-Position Earmuff comes with comfortable ear pads and padded headband to ensure all-day wearing without fatigue, and the durable design provides protection in tough, dirty environments.
- Extremely lightweight
- Multi-position (over head/ under chin/behind head)
- Includes crown strap

Comfort Band™ Hearing Protector (NRR – 23dB)

Designed to be worn under the chin, the MSA Comfort Band Hearing Protector is made with soft, easily cleanable pods and a durable plastic neck band. While not in use, the Comfort Band Hearing Protector can be left resting around your neck.

Sound Blocker™ 26 Hearing Protection (NRR – 26dB)

Designed for high noise areas such as industrial plants and construction sites, the Sound Blocker 26 comes in two models, one for use with the Defender faceshield frame and a non-slotted cap model.

Soprano Muff	
Soprano Muff Kit for Full Hats (NRR 25)	10034487
Economuff Line	
Economuff Earmuff	10004291
Economuff Multi-Position Earmuff	10061273
Comfort Band, each (must order in multiples of 20)	10003344
Sound Blocker Cap Model	
Sound Blocker 26 cap model (for Defender Faceshield Frame)	10026398
Sound Blocker 26 cap model* (for non-slotted caps)	10022021
Reusable Ear Plugs	
Tri-Seal Reusable Silicone Ear Plugs (corded) Dispenser box (suitable for wall hanging) of 100 individ. packaged pairs	10005607
Disposable Ear Plugs	
Round Ear Plugs (NRR – 29dB)	
FormFit Disposable Urethane Foam Ear Plugs (non-corded) Dispenser Box of 200 individually packaged pairs	10009333
FormFit Disposable Urethane Foam Ear Plugs (corded) Dispenser Box of 200 individually packaged pairs	10009332
Conical-Shaped Ear Plugs (NRR – 31dB)	
FormFit Disposable Molded Urethane Foam Ear Plugs (non-corded) Dispenser Box of 200 individually packaged pairs	10051348
FormFit Disposable Molded Urethane Foam Ear Plugs (corded) Dispenser Box of 200 individually packaged pairs	10051347

* Tested on Comfo and Skullgard Helmets.

Reusable Ear Plugs

Tri-Seal™ Reusable Silicone Ear Plugs (NRR – 25dB)

Ruggedly designed, made of soft, comfortable silicone, these reusable ear plugs are easy to insert in the ear and economical. They offer protection comparable to many MSA earmuffs. Tri-Seal corded plugs are available in dispenser boxes of 100 individually packaged pairs.

Disposable Ear Plugs

FormFit™ Disposable Foam Ear Plugs

For users who prefer to dispose of their plugs after each use, the FormFit plug is the answer. Easy to use and affordable, FormFit ear plugs offer very aggressive noise reduction while being very comfortable to wear. Available in corded and uncorded versions, in dispenser boxes of 200 pair.

round shape

conical shape

Electronic Hearing Protection

Guarding people against the daily hazards of noise is of paramount concern in countless industries. The challenge is to balance personal attenuation devices with comfort and the ability of communication and listening to music, so that workers will wear their hearing protectors all the time. With over 40 years of experience, MSA now offers a new wide range of hearing protectors with built-in electronics—from basic functions to high-specification communication devices. You have the choice between headband and helmet-mounted versions. All products are comfortable hearing protectors, designed to prevent you from feeling isolated, thereby encouragaing you to use them and so protecting your hearing for the rest of your life. Noise Reduction Rating (NRR) is third-party certified in accordance with ANSI S3.19-1974 and EN352-3. Also meets CSA Z94.2.

CutOff Slotted Cap Model on Advance Cap

Basic and Pro Line

The line features standard and advanced electronics with a very good price-to-performance ratio. Built-in features, such as FM and CutOff are optional.

ListenOnly Basic Headband Model

ListenOnly Basic Headband Model (NRR – 24dB)
ListenOnly Basic Slotted Cap Model (NRR – 22dB)

External connection to CD, MP3-player or scanner
• Connection lead with 3.5 mm stereo jack included
   (fits most CD and MP3-players, etc.)
• The cable can be removed easily when not needed

FM Pro Headband Model

FM Pro Headband Model (NRR – 24dB)
FM Pro Slotted Cap Model (NRR – 22dB)

Built-in radio receiver—stereo
• Scan stations automatically
• Memory for last selected station and volume
• Automatically switches off to save batteries
• Battery life of 120–140 hours

Electronic Hearing Protection			
	ListenOnly Basic	**FM Pro**	**CutOff Pro**
Headband model	10061275	10061280	10061278
Slotted cap model*	10061277	10061281	10061279
Hygiene Kit	10061536	10061293	10061293
Sound quality	mono	stereo	stereo
Volume memory		—	—
Battery save function		—	—
Battery life (approx. hours)		120–140	300
Downleads for Basic and Pro Line			
3.5 mm Stereo Plug			10061538
3.5 mm Mono Plug			10061539
2.5 mm Mono Plug			10061540
Hands Free, 2.5 mm Stereo Plug			10062072

* fits V-Gard, Advance, Topgard & Thermalgard slotted caps

CutOff Pro Headband Model

CutOff Pro Headband Model ((NRR – 24dB)
CutOff Pro Slotted Cap Model (NRR – 22dB)

Built-in level dependent function protects without your feeling isolated
• Lets through speech and other harmless sounds
   while protecting you from harmful noise
• Battery life of 1000 hours
• Amplification of weak sounds
• Auxilliary input for connection of external devices

Protection and communication with the Connect by Cable Series

Effective noise attenuation and amplification at the same time

Connect By Cable

A comfortable hearing protector equipped with a hard-wired lead (3.5 mm) and boom microphone.

- The standard Connect by Cable model comes with a hard-wired cable for connection to an MSA Push-To- Talk,or lapel microphone (No noise cancelling)
- Noise-cancelling boom microphone permits two-way communication with minimal interference from background noise
- Headband version comes with padded headband with adjustable pressure
- Muffs come with a hard-wired 3.5 mm cable adapter
- All MSA Helmet Communication System adapters will work with these muffs

Connect-by-Cable Cap Model

Connect-by-Cable Earmuffs

Connect By Cable	
Connect by Cable headband model (NRR – 25dB)	10064515
Connect by Cable slotted cap model (NRR – 23dB)	10064516
Hygiene Kit	10061293

Supreme Pro™ Muff

Our top model. Provides optimum protection with high amplification, AUX input and watertight battery compartment. Both earmuffs are shaped to suit both right-handed and left-handed shots.

- Two separate, well-shielded microphones for optimum stereo effect and location of sound direction
- High amplification and natural sound reproduction without "chopping"
- Around 600 hours battery life with two standard AAA batteries
- AUX input for connecting external audio sources, such as a radio. Lead with 3.5 mm mono jack plug included

Supreme Pro	
Supreme Pro headband model (NRR – 18dB)	10061285
Supreme Pro neckband model (NRR – 19dB)	10079966
Hygiene Kit	10061294

Supreme Pro-X Muff

Our top model just got better with high amplification, AUX input, and fully waterproof microphones and battery compartments. Slim design cups for both right-handed and left-handed shooters.

- Two separate, waterproof microphones with excellent sound quality and perfect directional hearing
- Removable headband made with exclusive functional material
- High amplification and a natural realistic sound
- 600 hours battery life with two each standard AAA batteries
- AUX-inlet (3, 5mm for hunting radio, dog tracking devices, CD players)
- Monocable included
- Tested to IP 67
- 5-year warranty on electronics

New!

Supreme Pro-X neckband model

Supreme Pro	
Supreme Pro-X headband model (NRR – 18dB)	10082167
Supreme Pro-X neckband model (NRR – 19dB)	10082166

Safety Vests, Cones and First Aid

MSA's new first aid products and safety gear are made of the best materials. Our reflective safety vests offer high-end reflective materials that make a big difference in visibility on the road. Our superior line of products now includes safety cones that have undergone extensive environmental, solvent and stability testing. They will stand up to harsh winter weather on the highway as well as the high heat and UV exposure of a bright summer day. Our First Aid Kits are made to withstand the rigors of your job site.

Class II Safety Vest
- Meets ANSI Class II Vest requirements for traffic up to 50 MPH
- Unique integral back pocket storage for when vest is not in use
- Horizonal and vertical stripes fpr excellent visibility even when bending
- Popular high-viz lime green color stands out better around orange traffic barriers

High Visibility Safety Vest
One size fits all to accommodate most wearers
- Hook and loop closures keep vest closed
- Elastic straps automatically adjust to waistline

Reflective Safety Vest
- Reflective stripes provide increased visibility
- Hook and loop closures keep vest closed
- Elastic straps automatically adjust to waistline

Safety Cones
- Available in 12", 18" or 28" sizes
- One-piece molded to help prevent cracking

62-Piece First Aid Kit
- Small, and yet content-rich kit
- Ideal for job, home or workshop use
- 10-person kit contains 62 pieces of first aid supplies
- Latex-free kit contents
- Includes instant cold compress
- Sturdy plastic, compact carrying case with handle

160-Piece First Aid Kit
- Exceeds ANSI Z308.1-2003 Standard requirements for Type II First Aid Kit
- Dispenser tray helps keep contents organized
- Includes major wound bandage and instant cold pack in an attractive translucent carrying case

Class II Safety Vest

28"

18"

12"

High Visibility Safety Vest

160-Piece First Aid Kit

Reflective Safety Vest

62-Piece First Aid Kit

Safety Vests	
ANSI Class II Safety Vest, order in mulitples of 6	10053455
High-Visibility Safety Vest, order in mulitples of 12	818040
Reflective Safety Vest, order in mulitples of 12	817890
Safety Cones	
12-inch cones, order in multiples of 20	10073426
18-inch cones, order in multiples of 10	10073425
28-inch cones, order in multiples of 6	10073424
First Aid Kit	
62-Piece First Aid Kit	10068529
160-Piece First Aid Kit	10049585

MSA Paraclete® Tactical Body Armor *NEW!*

MSA Paraclete Releasable Modular Vest

The Releasable Modular Vest (RMV) with patented release feature was designed for specialized military applications and is now available for your tactical teams. Activating the release feature allows the armor to be removed immediately for quick escape or administration of medical care. Law enforcement personnel benefit from the following features:

- Patented single-point release feature can be mounted on either side of the vest.
- Full Molle-style grid webbing compatible with our pockets, and military issue Molle / Spear pockets.
- 07 version includes low-profile flat-front Molle grid with no closure hardware
- The drag strap is sewn the full length of the vest.
- Integrated drink tube and communication channels located on each shoulder.
- The zip-off back panel allows the user to easily change the configuration of the back of the vest.
- Hook & loop closure allows rapid access to the internal armor plate pockets and the soft armor package.
- 10" x 12" rifle plate pockets
- Built-in side plate pockets for 6" X 6" hard plates.
- Mil. Spec. materials

MSA Paraclete Modular Vest Light

The Modular Vest Light (MVL) is designed for the professional that wants the lightest weight vest carrier possible, yet still offers unsurpassed quality and reliability.

PARACLETE®
PROVEN UNDER FIRE
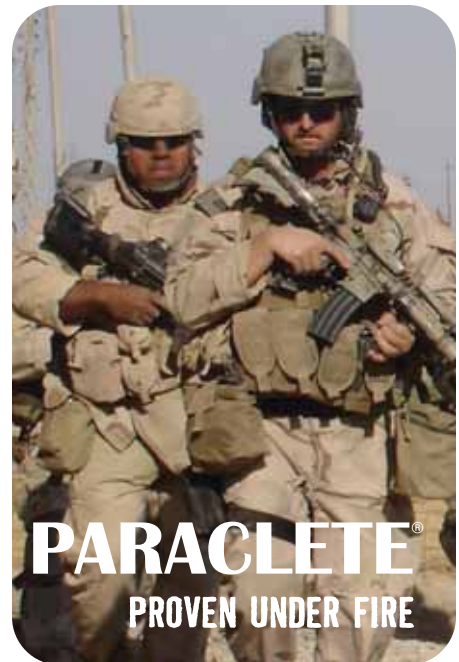
MSA Paraclete Releasable Modular Vests and Modular Light Vests

RMV05 Models

Size	P/N Black	P/N Green	Description
XS	RMV024-05-XS-BK	RMV024-05-XS-SG	Releasable Modular Vest Carrier, X-Small
SM	RMV024-05-SM-BK	RMV024-05-SM-SG	Releasable Modular Vest Carrier, Small
MD	RMV024-05-MD-BK	RMV024-05-MD-SG	Releasable Modular Vest Carrier, Medium
ML	RMV024-05-ML-BK	RMV024-05-ML-SG	Releasable Modular Vest Carrier, Medium Long
LG	RMV024-05-LG-BK	RMV024-05-LG-SG	Releasable Modular Vest Carrier, Large
XL	RMV024-05-XL-BK	RMV024-05-XL-SG	Releasable Modular Vest Carrier, X-Large

RMV07 Models

Size	P/N Black	P/N Green	Description
XS	RMV024-07-XS-BK	RMV024-07-XS-SG	Releasable Modular Vest Carrier, X-Small
SM	RMV024-07-SM-BK	RMV024-07-SM-SG	Releasable Modular Vest Carrier, Small
MD	RMV024-07-MD-BK	RMV024-07-MD-SG	Releasable Modular Vest Carrier, Medium
ML	RMV024-07-ML-BK	RMV024-07-ML-SG	Releasable Modular Vest Carrier, Medium Long
LG	RMV024-07-LG-BK	RMV024-07-LG-SG	Releasable Modular Vest Carrier, Large
XL	RMV024-07-XL-BK	RMV024-07-XL-SG	Releasable Modular Vest Carrier, X-Large

Releasable Modular Vest (RMV) 05

MSA Paraclete Modular Vest Light

RMV05 Models

Size	P/N Black	P/N Green	Description
XS	MVL024-XS-BK	MVL024-XS-SG	Modular Vest Light, Carrier, X-Small
SM	MVL024-SM-BK	MVL024-SM-SG	Modular Vest Light, Carrier, Small
MD	MVL024-MD-BK	MVL024-MD-SG	Modular Vest Light, Carrier, Medium
ML	MVL024-ML-BK	MVL024-ML-SG	Modular Vest Light, Carrier, Medium Long
LG	MVL024-LG-BK	MVL024-LG-SG	Modular Vest Light, Carrier, Large
XL	MVL024-XL-BK	MVL024-XL-SG	Modular Vest Light, Carrier, X-large

Releasable Modular Vest (RMV) 07

MSA Police Line

Sizing Chart for Paraclete Tactical Body Armor

Size	Chest (in.)	Height (in.)	Plate Size	Measurements (in.)
X-Small	34 – 38	5'5" – 5'8"	Small	8 ¾" x 11¾"
Small	38 – 42	5'7" – 5'11"	Small	8 ¾" x 11¾"
Medium	42 – 46	5'8" – 6'2"	Medium	9 ½" x 12 ½"
Medium Long	42 – 46	6' – 6'4"	Medium Long	9 ½" x 13 ¾"
Large	46 – 50	5'10" – 6'2"	Large	10 ¼" x 13 ¼"
X-Large	50 – 54	6' – 6'4"	X-Large	10 ¾" x 13 ¾"

Please provide size with order.

Armor Packages for MVL and RMV (Order same size as carrier)

Size	Part Number	Description
XS	K3K3A-PAE-XS	Level IIIA Soft Armor Inserts (Aramid) X-Small
SM	K3K3A-PAE-SM	Level IIIA Soft Armor Inserts (Aramid) Small
MD	K3K3A-PAE-MD	Level IIIA Soft Armor Inserts (Aramid) Medium
ML	K3K3A-PAE-ML	Level IIIA Soft Armor Inserts (Aramid) Medium Long
LG	K3K3A-PAE-LG	Level IIIA Soft Armor Inserts (Aramid) Large
XL	K3K3A-PAE-XL	Level IIIA Soft Armor Inserts (Aramid) X-Large

Armor Accessories

Part Number Black	Part Number Green	Description
PCL019T-SM-BK	PCL019T-SM-SG	Collar w/ Aramid Soft Armor, Small
PCL019T-MD-BK	PCL019T-MD-SG	Collar w/ Aramid Soft Armor, Medium
PCL019T-LG-BK	PCL019T-LG-SG	Collar w/ Aramid Soft Armor, Large
PFY019T-BK	PFY019T-SG	Front Yoke w/ Aramid Soft Armor
PGP019T-BK	PGP019T-SG	Groin Protector w/ Aramid Soft Armor
PSP019T-BK	PSP019T-SG	Shoulder Protector w/ Aramid Soft Armor (set)
BPA019-BK	BPA019-SG	Bicep Protector w/Aramid Soft Armor (set)
SPC019-BK	SPC019-SG	Shoulder Protector Cover (set)
CSPAH019-BK	CSPAH019-SG	Cummerbund Side Plate Pocket (set)

Part Number	Description
SHP019	6 inch Single Curve Boron Carbide (B4C) Plate Ea.

Modular Expandibility

Collar Protection

Groin Protector

Modular Pouches and Accessories

The MSA Paraclete line of pockets ensures that you will have flexibility at the team, individual, and mission– specific level. Our modular pockets and pouches includes a patented attachment system that negates the need for clips, snaps, plastic tie downs, and cordage. The attachment device is permanently affixed to the equipment assembly, so it cannot be lost or otherwise separated from the pocket, pouch, or holster. This system will not rust or become unserviceable even under the most extreme environmental conditions, and it maintains its flexibility in frigid climates. It's as easy to use as simple basket-weaving. No other tactical modular attachment system in the world today can compare with its simplicity, durability, and flexibility.

Modular Pockets and Pouches

Part Number		Description
Black	**Green**	
ADP019-BK	ADP019-SG	Mag Pouch Double M16/M4
AFP019R-9-BK	AFP019R-9-SG	Mag Pouch 9mm Double
AMP507-BK	AMP507-SG	Mag Pouch Double MP-5
ASG019-BK	ASG019-SG	Ammo Pouch - Shotgun
BPP0707-BK	BPP0707-SG	Flash Bang Pouch - X 3
GPL077-LG-BK	GPL077-LG-SG	GP Pouch, Large
GPS019-SM-BK	GPS019-SM-SG	GP Pouch, Small
RUL019-LG-BK	RUL019-LG-SG	Radio Pouch Universal, Large
RUS019-SM-BK	RUS019-SM-SG	Radio Pouch Universal, Small
MCR019-BK	MCR019-SG	Chemical Mask Pouch M-45
HFG019B-BK	HFG019B-SG	Holster - 45/Glock/9MM
RTH007-BK	RTH007-SG	Holster - Reversible Thigh
FLH077-BK	FLH077-SG	Flashlight Holder
FSP019-BK	FSP019-SG	Foam Shoulder Pads
CBK019-BK	CBK019-SG	Pouch - Hydration System

Mag Pouch M16/M4

Mag Pouch 9mm (Double)

Ammo Pouch

Radio Pouch (Large)

Radio Pouch (Small)

Flashlight Holder

Chemical Mask Pouch

Holster - Glock

Small GP Pouch

Hydration System Pouch

Foam Shoulder Pads

ForceField® Tango Tactical Armor

ForceField Tango Tactical Armor

Your tactical applications demand the same reliability and flexibility that's demanded of you.

You get flexibility and durability and more from MSA's ForceField Tango Tactical Armor. This side-opening modular tactical platform integrates key features to satisfy your needs for protection, versatility, and comfort.

Safety and protection:
- Side-opening ballistics panel with a "no-hardware" clamshell-style front closure for fast, easy donning and doffing
- Overlapping ballistic shoulders for better comfort and length flexibility
- Removable ballistic upper arm and collar, removable front yoke throat protection, and pull-down ballistic groin protection

Versatility and comfort:
- Rugged Cordura Nylon construction
- A full array of webbed Molle-style pocket-type attachments for ammunition, side arms, protective equipment and supplies to meet the needs of your mission
- Internal cummerbund (belly band) for added comfort and stability
- Integrated routing for communication cables and hydration tubes
- Rubberized textured shoulders for weapon stability

ForceField Tango Tactical Armor

Part No.	Vest Description	Size
10067790	ForceField Tango, Webbed, K129 IIIA, Black	3XL
10067791	ForceField Tango, Webbed, K129 IIIA, Black	2XL
10067792	ForceField Tango, Webbed, K129 IIIA, Black	XLG
10067793	ForceField Tango, Webbed, K129 IIIA, Black	LG
10067794	ForceField Tango, Webbed, K129 IIIA, Black	MED
10067795	ForceField Tango, Webbed, XTGIIIA, Black	3XL
10067796	ForceField Tango, Webbed, XTGIIIA, Black	XL
10067797	ForceField Tango, Webbed, XTGIIIA, Black	2XL
10067798	ForceField Tango, Webbed, XTGIIIA, Black	LG
10067881	ForceField Tango, Webbed, XTGIIIA, Black	MED

Rifle Plates – Level 4

Part No.	Description
10067349	Level 4 Rifle Plate - Triple Curve
10067372	Level 4 Rifle Plate - Single Curve

Level IV Ceramic Armor Plate

Forcefield Tango Accessories

Load Bearing Vests and Plate Carriers

Part Number		Description
Black	Green	
HPV019H-LG-BK	HPV019H-LG-SG	Hard Plate Carrier, Large
HPC019-LG-BK	HPC019-LG-SG	Hard Plate Carrier with Cummerbund, Large

Part Number	Description
LCS-MOLLE-5	MOLLE load bearing Vest, with add on back panel

Standard Tactical Armor Sizing

Chest Measurement (Inches)	Size
35-38	SM
38.5-41	MED
41.5-44	LG
44.5-47	XL
47.5-50	2XL
50.5-53	3XL

ForceField® Alpha Concealable Body Armor

You can rely on MSA's concealable body armor—the ForceField Alpha Concealable Vest—for maximum comfort without sacrificing ballistic coverage. Our sizing, style, and inventive design features will raise your expectations of what a ballistic vest can—and should—be.

The Armor-Latch™ Closure enhances body coverage and boosts your confidence while contributing significantly to the comforrt of your full-wrap body armor.

Your one-handed "forward pull" adjustment easily secures a front-to-back panel overlap, automatically aligning front and back panels for proper side coverage and comfort. The aligned solid closure also permits independent movement of the front and back armor panels, so you have greater mobility.

Available Colors: Black, Blue, White and Olive Green

Black **Blue**

White **Olive Green**

MSA ForceField Alpha Concealable Armor - Male

Vest Description	Ballistic Package	Level	PN/Size			Body Type	Length
			Medium	Large	X-Large		
Alpha (Black)	Kevlar - K129	2	10066742	10066743	10066744	1	13
Alpha (Black)	Kevlar - XLT - XTGII	2	10066745	10066746	10066747	1	13
Alpha (Black)	Kevlar - XLT - XTGIIIA	3a	10066748	10066749	10066750	1	13

See the ATO (Assemble -to-Order) chart on p. 141 for more ordering options.

ForceField® Bravo Concealable Body Armor

The ForceField Bravo Concealable Carrier Assembly is your choice for traditional styling, low profile comfort and protection. The ForceField Bravo incorporates MSA's unique Flex Panel Sizing for optimal coverage and full panel convertibility with the MSA Alpha Vest.
- Poly/cotton outer shell for durability, a low profile and concealability.
- Woven nylon, mesh liner to provide the officer with comfort and moisture management over a wide range of temperatures.
- Four- or six-point flexible adjustment.
- Fully removable straps.
- Flex Panel Sizing.
- Fully hidden hook and loop closure for easy panel removal and insertion.

Available Colors: Black, Blue, White, Olive Green and Tan

Black **Blue** **White** **Olive Green** **Tan**
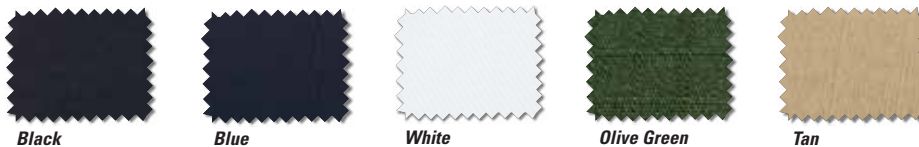
MSA ForceField Bravo Concealable Armor - Male

Vest Description	Ballistic Package	Level	PN/Size			Body Type	Length
			Medium	Large	X-Large		
Bravo (Navy Blue), 4-Point	Kevlar - K129	2	10066751	10066752	10066753	1	13
Bravo (Navy Blue), 4-Point	Kevlar - XLT - XTGII	2	10066754	10066755	10066756	1	13
Bravo (Navy Blue), 4-Point	Kevlar-K129	3a	10066757	10066758	10066759	1	13
Bravo (Navy Blue), 4-Point	Kevlar - XLT - XTGIIIA	3a	10071255	10071256	10071257	1	13

See the ATO (Assemble -to-Order) chart on p. 141 for more ordering options.

ForceField Concealable Accessories—Trauma Plates

Part No.	Description
10067347	Trauma Plate Steel, 6" x 8"
10067348	Trauma Pack, Soft Ballistic, 6" x 8"

MSA Police Line

ForceField® Echo Armor System NEW!

The ForceField Echo Armor System is a concealable ballistic vest with exclusive side closure to ensure front-overback panel overlap. Built for comfort and safety, it offers extra-wide shoulder straps and a choice of ballistic packages.

MSA's ForceField Echo Carrier features:
• MSA's exclusive, patent-pending Armor-Latch side closure
– Improves user safety by ensuring that the front panel overlaps the back panel
– Quickly and comfortably adjusts, with a natural forward-pull motion
– Secures panels in place while maintaining independent movement of front and back panels
• Advanced Microfiber rip-stop outer-shell material
• Very wide removable shoulder straps to enhance load-bearing comfort
• Easy accommodation of male and female sizing and vest panels
• Standard colors: black, white, navy blue, and tan

MSA ForceField Echo Armor System

Part No.	Size	Color	Vest Description (sample carriers only, no ballistics)
10083542	Small	Black	ForceField Echo, Male
10083543	Medium	Black	ForceField Echo, Male
10083544	Large	Black	ForceField Echo, Male
10083545	X-Large	Black	ForceField Echo, Male
10083546	Standard	Black	ForceField Echo, Female

IMPORTANT: Order your customized configuration with ballistics using MSA's exclusive Assemble-to-Order (ATO) matrix on p. 141. Please provide color, sizes, and ballistic information on order.

MSA POLICE LINE

Lightweight Outer Carriers NEW!

• The **OPC-100 (Outer Patrol Carrier)**, a general-duty external carrier with multiple sewn-in utility pockets and pouches. Large utility pockets include elastic to hold utility items. Includes handcuff pouch, flashlight loop, and small utility pockets.

• The **EMS (Emergency Medical Services) Carrier**, similar to the OPC-100 Carrier but provides larger utility pockets, reflective trim and color variations to accommodate emergency medical services and other specialty applications.

• The **Delta LTC (Lightweight Tactical Carrier)**, a similar externally worn carrier with front and back pockets accommodating rifle plate sizes of up to 10" x 12". Also included is an integrated webbed MOLLE-style grid.

• Lightweight outer carriers allow the use of MSA Concealable Armor panels in an externally worn vest
• Adjustable shoulder harnesses loop to rear panel with pull-down adjustment
• Side closure via overlapping hook-and-loop ensures front-over-back panel position
• Internal cummerbund-style elastic closure provides stability and comfort
• Front and rear hook-and-loop fields and badge holder provides for identification placement

MSA POLICE LINE

Lightweight Outer Carriers

	Color	Small	Medium	Large	X-Large
OPC-100 (Outer Patrol Carrier)	Black	10078711	10078712	10078713	10078714
EMS (Emergency Medical Services) Carrier	Blue	10078715	10078716	10078717	10078718
Delta LTC (Lightweight Tactical Carrier)	Black	10078719	10078720	10078782	10078722

See the ATO (Assemble -to-Order) chart on p. 141 for more ordering options.

Ballistic Packages

All Forcefield ballistic packages are certified to NIJ 0101.04. In addition to ballisic certification requirements conducted at independent laboratories, MSA's advanced R&D center conducts our own materials testing, accelerated aging, and conditioning as well as ballistics testing at our in-house state-of-the-art ballistics laboratories.

ForceField XTG Series

Materials: Kevlar XLT and Goldflex

MSA's XTG Series features KEVLAR® Comfort XLT™ Fabric, the latest ballistic technology from DuPont™ Kevlar®. This technology provides lightweight protection and comfort. Honeywell's GoldFlex Aramid laminate provides excellent mobility and stopping power.

ForceField K129 Series

Materials: 100% Woven Kevlar® 129 Fabric

The K129 Ballistic series provides confidence you need on the job. Consisting of 100% woven Kevlar® 129 Aramid Fabric, the ForceField K129 Series fits most budgets with outstanding ballistic performance.

See specifications for details.

NIJ Standard 0101.04 Ballistic Chart

Threat Level	Test Bullet	Bullet Weight	Bullet Velocity
IIA	9mm - FMJ RN	124gr./8.0g	1120 ft/s - 341 m/s
IIA	40 S&W - FMJ	180gr./11.7g	1055 ft/s - 322 m/s
II	9mm - FMJ RN	124gr./8.0g	1205 ft/s - 367 m/s
II	357 Mag - JSP	158gr./10.2g	1430 ft/s - 436 m/s
IIIA	9mm - FMJ RN	124gr./8.0g	1430 ft/s - 436 m/s
IIIA	44 Mag - SJHP	240gr./15.6g	1430 ft/s - 436 m/s
III	7.62mm NATO - FMJ	148gr./9.6g	2780 ft/s - 847 m/s
IV	.30 caliber M2 AP	166gr./10.8g	2880 ft/s - 878 m/s

At a minimum, officers should select body armor that is rated to stop their own service weapon.

ForceField® Concealable Body Armor (Male) Assemble-to-Order System

MSA ForceField Concealable Body Armor - Male Level II Assemble-To-Order System

Ballistic Package		# of Carriers		Carrier		Color		Size*		Chest		Waist		Center Front Length		Center Back Length		Side Closures		Accessories	
0	None	0	None	0	None	1	Black	0	None	0	None	0	None	0	None	0	None	0	None	0	None
1	Level II XTG	1	One	1	Alpha	2	Navy	1	Small	1	35" – 38"	1	26" – 29"	1	11"	1	13"	1	Single 4" Strap	1	Soft Trauma Pack
2	Level II K129	2	Two	2	Bravo	3	OD Green	2	Medium	2	38½" – 41"	2	29" – 32½"	2	12"	2	14"	2	Dual 2" Side Straps	2	Steel Trauma Pack
		3	Three	3	OPC-100	4	White	3	Large	3	41½" – 44"	3	32½" – 35½"	3	13"	3	15"			3	Both Soft & Steel
				4	Delta	5	Tan	4	X-Large	4	44½" – 47"	4	35½" – 38½"	4	14"	4	16"				
				5	EMS			5	2X-Large	5	47½" – 50"	5	39" – 41½"	5	15"	5	17"				
				6	Echo			6	3X-Large	6	50½" – 53"	6	41½" – 44½"	6	16"	6	18"				
				7	Alpha Sleeveless							7	44½" – 47½"	7	17"	7	19"				
												8	48" – 50½"								

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MSA ForceField Concealable Body Armor - Male Level IIIA Assemble-To-Order System

Ballistic Package		# of Carriers		Carrier		Color		Size*		Chest		Waist		Center Front Length		Center Back Length		Side Closures		Accessories	
0	None	0	None	0	None	1	Black	0	None	0	None	0	None	0	None	0	None	0	None	0	None
1	Level II XTG	1	One	1	Alpha	2	Navy	1	Small	1	35" – 38"	1	26" – 29"	1	11"	1	13"	1	Single 4" Strap	1	Soft Trauma Pack
2	Level II K129	2	Two	2	Bravo	3	OD Green	2	Medium	2	38½" – 41"	2	29" – 32½"	2	12"	2	14"	2	Dual 2" Side Straps	2	Steel Trauma Pack
		3	Three	3	OPC-100	4	White	3	Large	3	41½" – 44"	3	32½" – 35½"	3	13"	3	15"			3	Both Soft & Steel
				4	Delta	5	Tan	4	X-Large	4	44½" – 47"	4	35½" – 38½"	4	14"	4	16"				
				5	EMS			5	2X-Large	5	47½" – 50"	5	39" – 41½"	5	15"	5	17"				
				6	Echo			6	3X-Large	6	50½" – 53"	6	41½" – 44½"	6	16"	6	18"				
				7	Alpha Sleeveless							7	44½" – 47½"	7	17"	7	19"				
												8	48" – 50½"								

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ForceField® Concealable Female Body Armor

The ForceField Bravo Female Concealable Carrier meets the needs of female officers in styling, comfort, and protection. ForceField Bravo incorporates MSA's unique:

- Non-darted seamless ballistic construction that accommodates the female form while minimizing uncomfortable wear.
- Full-wrap ballistic coverage which provides unmatched side protection.
- Flexible sizing, ensuring a comfortable fit.

ForceField Concealable Armor - Female

Part No.	Vest Description
10074446	ForceField Bravo, XTG Level II, Female
10074445	ForceField Bravo, XTG Level IIIA, Female
10074443	ForceField Bravo, K129 Level II, Female
10074444	ForceField Bravo, K129 Level IIIA, Female

MSA
POLICE LINE

MSA ForceField Concealable Body Armor - Female Level II Assemble-To-Order System

Ballistic Package		# of Carriers		Carrier		Color		Chest		Waist		Center Front Length		Center Back Length		Side Closures		Accessories	
0	None	0	None	0	None	1	Black	1	32" – 33"	1	24" – 25"	0	None	0	None	0	None	0	None
1	Level II XTG	1	One	1	Bravo	2	Navy	2	33" – 34"	2	25" – 26"	1	11"	1	12 – 12½"	1	Single 4" Strap	1	Soft Trauma Pack
2	Level II K129	2	Two	2	Echo	3	OD Green	3	34" – 35"	3	26" – 27"	2	12"	2	13 – 13½"	2	Dual 2" Side Straps	2	Steel Trauma Pack
		3	Three			4	White	4	35" – 36"	4	27" – 28"	3	13"	3	14 – 14½"			3	Both Soft & Steel
						5	Tan	5	36" – 37"	5	28" – 30"	4	14"	4	15 – 15½"				
								6	37" – 39"	6	31" – 33"	5	15"	5	16 – 16½"				
								7	39" – 40"	7	33" – 35"	6	16"	6	17 – 17½"				
								8	40" – 42"	8	35" – 37"	7	17"	7	18 – 18½"				
								9	42" – 44"	9	37" – 39"								
								10	44" – 46"	10	39" – 41"								
								11	46" – 47"	11	41" – 43"								
								12	48" – 50"	12	43" – 45"								
								13	50" – 52"	13	45" – 47"								
								14	52" – 54"	14	47" – 49"								
								15	54" – 56"	15	49" – 51"								
								16	56" – 57"	16	51" – 53"								
								17	58" – 60"	17	53" – 55"								

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MSA ForceField Concealable Body Armor - Female Level IIIA Assemble-To-Order System

Ballistic Package		# of Carriers		Carrier		Color		Chest		Waist		Center Front Length		Center Back Length		Side Closures		Accessories	
0	None	0	None	0	None	1	Black	1	32" – 33"	1	24" – 25"	0	None	0	None	0	None	0	None
1	Level II XTG	1	One	1	Bravo	2	Navy	2	33" – 34"	2	25" – 26"	1	11"	1	12 – 12½"	1	Single 4" Strap	1	Soft Trauma Pack
2	Level II K129	2	Two	2	Echo	3	OD Green	3	34" – 35"	3	26" – 27"	2	12"	2	13 – 13½"	2	Dual 2" Side Straps	2	Steel Trauma Pack
		3	Three			4	White	4	35" – 36"	4	27" – 28"	3	13"	3	14 – 14½"			3	Both Soft & Steel
						5	Tan	5	36" – 37"	5	28" – 30"	4	14"	4	15 – 15½"				
								6	37" – 39"	6	31" – 33"	5	15"	5	16 – 16½"				
								7	39" – 40"	7	33" – 35"	6	16"	6	17 – 17½"				
								8	40" – 42"	8	35" – 37"	7	17"	7	18 – 18½"				
								9	42" – 44"	9	37" – 39"								
								10	44" – 46"	10	39" – 41"								
								11	46" – 47"	11	41" – 43"								
								12	48" – 50"	12	43" – 45"								
								13	50" – 52"	13	45" – 47"								
								14	52" – 54"	14	47" – 49"								
								15	54" – 56"	15	49" – 51"								
								16	56" – 57"	16	51" – 53"								
								17	58" – 60"	17	53" – 55"								

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ForceField® ACH Advanced Combat Helmet

Superior balllistic and high-speed frag protection plus comfort

The MSA Advanced Combat Helmet was originally developed for the U.S. Military Special Operations Command, meeting stringent requirements and unprecedented demands, and setting new performance standards. The ACH has been credited with "taking the bullet" and saving several soldiers' lives during combat, and was named one of the 10 Best Inventions of 2002 by the US Army Material Command.

Now MSA's ACH, battle-tested in Iraq and Afghanistan, is available for YOU in Law Enforcement, enhanced to meet your advanced handgun specification. MSA's ForceField Advanced Combat Helmet delivers the best impact protection, stability, and comfort available.

ForceField ACH Specifications

Ballistic Performance, IIIA

- 124 grain, 9mm
- 240 grain, 44 Magnum

Fragmentation Performance Specification (V50)

- 2 grain RCC @ 4075 fps
- 4 grain RCC @ 3450 fps
- 16 grain RCC @ 2425 fps
- 64 grain RCC @1700 fps

NTOA MEMBER TESTED and RECOMMENDED

MSA ForceField ACH

Shell Size	Pad Size – Thickness	Head Size	MSA P/N Black - No NVG Hole	MSA P/N Green - No NVG Hole	MSA P/N Black - Single NVG Hole	MSA P/N Green - Single NVG Hole
Medium	No. 8 – 1"	6 1/2 – 7	10060496	10060499	10060497	10060500
Medium	No. 6 – 3/4"	7 – 7 1/4	10060484	10060487	10060485	10060488
Medium	No. 4 - 1/2"	7 1/4 – 7 1/2	10078896	10079897	10079895	10079898
Large	No. 8 – 1"	7 1/4 – 7 1/2	10060502	10060505	10060503	10060506
Large	No. 6 – 3/4"	7 1/2 – 7 3/4	10060490	10060493	10060491	10060494
Large	No. 4 – 1/2"	7 3/4 – 8	10079800	10079902	10079899	10079901

Advanced Combat Helmet (ACH) - TC 2000 Military Series

ACH TC-2000 — GREEN

No. Holes	Medium Size, Pad Set #6 Part No.	Medium Size, Pad Set #8 Part No.	Large Size, Pad Set #6 Part No.	Large Size, Pad Set #8 Part No.	Extra-Large Size, Pad Set #6 Part No.	Extra-Large Size, Pad Set #8 Part No.
0	300098A	300641A	300099A	300642A	—	—
1	300188A	300647A	300189A	300648A	010050873	10050874
2	300363A	300653A	300371A	300654A	—	—
3	300364A	300659A	300372A	300660A	—	—

ACH TC-2000 — BLACK

No. Holes	Medium Size, Pad Set #6 Part No.	Medium Size, Pad Set #8 Part No.	Large Size, Pad Set #6 Part No.	Large Size, Pad Set #8 Part No.
0	300134A	300689A	300135A	300690A
1	300368A	300695A	300376A	300696A
2	300369A	300701A	300377A	300702A
3	300370A	300707A	300378A	300708A

ACH TC-2000 — TAN

No. Holes	Medium Size, Pad Set #6 Part No.	Medium Size, Pad Set #8 Part No.	Large Size, Pad Set #6 Part No.	Large Size, Pad Set #8 Part No.
0	300132A	300665A	300133A	300666A
1	300365A	300671A	300373A	300672A
2	300366A	300677A	300374A	300678A
3	300367A	300683A	300375A	300684A

MSA POLICE LINE

Helmet Pad Kit

Accessories and Replacement Parts

300021A	Chinstrap
10060678	Pad Kit, Size 6 – 3/4"
10060679	Pad Kit, Size 8 – 1"
10079894	Pad Kit, Size 4 – 1/2" thickness
10060735	Pad Kit, Combat Helmet, MD/LG, 10 Sets, Size 6
10060736	Pad Kit, Combat Helmet, MD/LG, 10 Sets, Size 8
	Pad Kit, Combat Helmet, MD/LG, 10 Sets, Size 4

MSA Police Line

ForceField® ACH Accessory Faceshields

Removable full-wrap visor attachments that can be field deployed and mounted to all sizes of ACH style helmets in order to protect the user's face from projectiles and debris that may be encountered in performing law enforcement, first response, and crowd control enforcement tasks.

ForceField ACH Accessory Faceshields	
10072800	Military Style Shield, .250" Thickness, short, Anti-Fog
10072804	Military Style Shield, .250" Thickness, long, Anti-Fog
10072799	Riot Shield, .150" Thickness, short
10072803	Riot Shield, .150" Thickness, long

Supreme Pro™ High Noise Communication Systems

NEW!

The Supreme Pro Communication System integrates with ballistic helmets providing unobtrusive communications and hearing protection in areas of loud impulsive sounds, such as areas where weapons may be fired. The system protects your hearing while enabling clear radio communications. Cup-mounted microphones enhance user situational awareness, allowing the user to hear ambient sounds within the environment while protecting your hearing. The communication system is used as either as a stand-alone headset or with MSA's ForceField ACH, Millennium CBRN Gas Mask and eyewear. This noise-canceling boom microphone-based system interfaces with various police radio transceivers and intercom systems.

- Hands-free monitoring
- Functional with gloved hands
- Connects to communication radios via MSA's TacPTT
- Two-way communication with minimal background noise interference
- Lightweight, comfortable, and easy to use
- Superior hearing protection and amplification

Supreme Pro Neckband Style

TacPTT

A Push-To-Talk assembly is made available for integration with the upper headset assembly. Methods of affixing the PTT assembly to BDUs or protective vests will include military spec hook and loop fastener materials, a mil-spec steel alligator-style clip or velcro. Other options and accessories will be made available including both water-resistant headset inline quick disconnects and remote finger PTTs.

Neckband Style

Supreme Pro Communication Systems		
Description	Headband	Neckband
Supreme Pro Headset, Boom Mic R, Nexus	10079965	10079962
Supreme Pro Headset, Boom Mic L, Nexus	10079964	10079967
Accessories		
Finger PTT	10083177	
Hygiene kit, complete with cushions & inserts	10061294	

Headband Style

Radio Manufacturer	U.S. Radio Model(s)	Part No.
KENWOOD	Kenwood TK190, TK280/380/290/390, 480, 481, 2140, 3140, 290K, 2180	10078233
MOTOROLA	SABER	10079684
MOTOROLA	Motorola HT1000, JT1000, MT2000, MTX2000, MTX838/839, MTS2000, MTX2000, MTX8000, MTX9000, Transcrypt Stealth, GP900, MTX, JEDI, XTS 3500R, XTS 3000R, PTX1200, PTX3600, XTS5000, XTS5000R, GP900, XTS1500, XTS2500, XTS3000	10078232
MOTOROLA	Motorola HT750, HT1250, GP328, Pro5150, LS, Quick Disconnect, HT1550, GP328, Hardwired, Pro5150,HT1550XLS, Pro7150, Pro7350, Pro7550, Pro9150, MTX850, MTX850LS, GP329, GP388, GP339, GP340, GP360, GP680, MTX8250, MTX8250-LS, MTX950, MTX9250, PTX700, PTX760, PTX780, PR860	10077885
ICOM	Top load IC-F10/20, IC-F3S,IC-F4S	10079722
M/A-COM	P7100	10078234

MSA Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010

Making Safety as Easy as 1, 2, 3...

1 HARNESS

What do I want?

Comfort. You want the perfect fit. To ensure a perfect fit, harnesses are available in different sizes. A standard size will fit most workers. See sizing selection chart to determine the best size for you.

Ease of Use. You want a harness that is easy for you to get into and adjust. Harnesses are available in primarily two **styles:**
- **Vestype (vest style).** A Vestype harness is put on like a jacket.
- **Pullover (cross-chest).** A pullover harness is put on over the head, similar to putting on a sweater.

The choice on style is a matter of personal preference.

There are also different types of **leg strap connections** available on a harness:
- **Qwik-Fit** (mating buckle)
- **Tongue Buckle**

Qwik Fit   Tongue Buckle
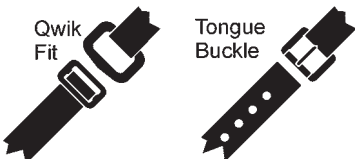
Both styles offer fast and easy connection and adjustment. *The choice of leg strap connections is a matter of personal preference.*

You also have a choice of **D-Ring configurations** on a harness: Back D-rings (required on every harness), hip (or side) D-rings, or chest D-rings. General D-ring usage is as follows:
- **Back D-Ring.** This is the attachment point for your lanyard. It can also be used as a rescueattachment.
- **Hip (or side) D-rings.** Typically used for workpositioning activities to allow the worker to have their hands free to perform work, or for travel restriction applications.
- **Chest D-ring.** Typically used for ladder climbing systems, rescue operations, or personnel riding applications.

2 LANYARD

How do I know which to choose?

There are two primary types of lanyards:
- **Shock-absorbing lanyards** used when the free fall distance (fall hazard) can exceed 2 feet
- **Restraint or positioning lanyards** used only when free fall distance (fall hazard) can be limited to 2 feet or less

In choosing the correct lanyard, you must **keep the application in mind.**
- Make certain the lanyard is the proper length to allow the necessary worker movement/positioning.
- Make certain that the right material type is chosen (depending on your work environment).
  – Cable works best in high heat environments or around sharp edges.
  – Webbing works best in most other applications.
- Make certain you have **calculated your total fall distance**. See diagram for more information.

You also need to consider the compatibility of the system components. Components produced by different manufacturers may not be interchangeable. The best way to ensure compatibility is to purchase all components from the same manufacturer.

CALCULATING TOTAL FALL DISTANCE

Anchor Point
6 ft Length of Lanyard
3.5 ft Deceleration Distance
6 ft Height of Worker
1 ft Safety Factor
16.5 ft Total
Before Fall
Free Fall
After Fall
Closest Object in Fall Path

3 CONNECTOR

How do I know which to choose?

Connector selection is **driven primarily by application**. You will need to carefully consider your work environment , in particular the type of structure where the connector will be attached.

Examples include:
- Roof
- Scaffold
- Steel Beam
- Concrete Column
- Rail

Weight should also be a consideration if a worker will need to carry the connector around during the work day.

You will also need to **consider the number of workers** required to attach to the connector. Most connectors are rated for 1 person with a 5,000 pound minimum breaking strength. Connectors are required, by OSHA, to have a minimum breaking strength of 5,000 pounds per person attached. For example, if you are going to attach 2 people to a connector, the connector must be rated to 10,000 pounds.
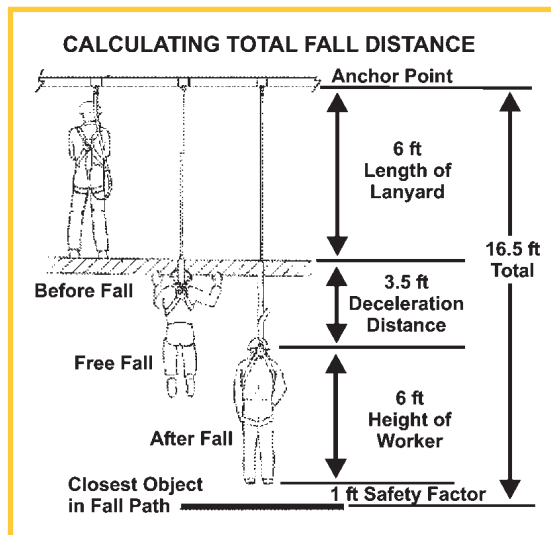
Fall Protection

Approvals and Standards

What is OSHA?

OSHA (Occupational Safety and Health Administraation) rules and regulations are enforceable by law. Non-compliance with OSHA rules and regulations can result in stiff penalties and abatement periods.

What is ANSI?

ANSI (American National Standards Institute) is a voluntary standardization system and does not possess the ability to enforce its standards. ANSI facilitates development of national standards by establishing consensus among manufacturersand consumers. Many of OSHA's regulations are adopted from ANSI standards.

GENERAL FALL ARREST REQUIREMENTS

OSHA 29 CFR 1926.502 requires (but is not limited to):
- Body belts are not acceptable as part of a personal fall arrest system
- Only locking type snaphooks shall be used
- Anchorages used for attachment of personal fall arrest systems must be capable of supporting at least 5,000 lbs per employee attached
- Personal Fall Arrest systems shall be rigged such that an employee can neither free fall more than 6' nor contact any lower level

ANSI Z359.1 requires (but is not limited to):
- Snaphooks and carabiners shall be self-closing and self-locking
- Equipment shall be inspected by the user before each use and, additionally, by a competent person other than the user at intervals of no more than 1 year
- Prior to selecting a personal fall arrest system, the user shall make an assessment of workspace conditions where the equipment is required

Standards Update

STANDARDS UPDATE

Notice of Revision to the ANSI Z359 Standard for Personal Fall Arrest

New Standard to be Issued

The ANSI Z359 Accredited Standards Committee has completed work on a new series of fall protection standards to be published in August 2007, with an effective date of October 15, 2007. The new standards will replace the current ANSI Z359.1-1992(R1999). The current standard will be replaced by a series of five new standards:

- ANSI Z359.0-2007 . . . . .Definitions
- ANSI Z359.1-2007 . . . . .Fall Arrest Systems, Subsystems and Components
- ANSI Z359.2-2007 . . . . .Minimum Requirements for a Comprehensive, Managed Fall Protection Program
- ANSI Z359.3-2007 . . . . .Work Positioning and Travel Restriction Systems, Subsystems and Components
- ANSI Z359.4-2007 . . . . .Assisted-Rescue and Self-Rescue Systems, Subsystems and Components

ANSI Z359.1-2007 includes two new requirements specific to lanyards:

- Snaphook and carabiner gate strength will increase to 3,600 pounds
- Twin-leg fall arrest lanyards will be tested to 5,000 pounds at the junction point where the lanyard legs come together.

The lanyards in this catalog on pages 157–162 comply with ANSI Z359.1-1992 (R1999). By the effective date of the new ANSI Z 359 family of standards MSA will have a new line of lanyards compliant to ANSI Z359.1-2007. Please check our website for a complete list of lanyards compliant to the new ANSI Z359.1-2007 standard and to learn more about the new ANSI Z359 family of standards.

1 HARNESS

OSHA 29 CFR 1926.502 requires
(but is not limited to):
- D-Rings shall have a minimum breaking strength of 5,000 lbs
- D-Rings shall be proof tested to 3,600 lbs
- The attachment point of the harness shall be located in the center of the wearer's back near shoulder level
- Harnesses shall be used only for employee protection
- Harnesses subjected to impact loading must be removed from service

ANSI Z359.1 requires (but is not limited to):
- D-Rings, O-Rings, and oval rings shall be capable of withstanding a tensile load of 5,000 lbs
- Adjusters shall be capable of withstanding a tensile load of 4,000 lbs
- All D-Rings and O-Rings shall be subjected to proof load testing to 3,600 lbs
- The fall arrest attachment shall be located at the back (dorsal) position
- Harnesses subjected to impact loading must be removed from service

2 LANYARD

OSHA 29 CFR 1926.502 requires
(but is not limited to):
- Lanyards shall have a minimum breaking strength of 5,000 lbs
- Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook
- Shock-Absorbing lanyards shall limit the maximum arresting force on an employee to 1,800 lbs when used with a body harness
- Shock-Absorbing Lanyards shall limit maximum deceleration distance to 3.5 feet.
- Lanyards subjected to impact loading must be removed from service

ANSI Z359.1 requires (but is not limited to):
- Lanyards shall have a minimum breaking strength of 5,000 lbs
- Snaphooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snaphook
- Shock-Absorbing lanyards shall limit the maximum arresting force to 900 pounds
- Shock-Absorbing Lanyards shall limit maximum deceleration distance to 3.5 feet.
- Lanyards subjected to impact loading must be removed from service

3 CONNECTOR

OSHA 29 CFR 1926.502 requires
(but is not limited to):
- D-Rings shall have a minimum breaking strength of 5,000 lbs
- D-Rings shall be proof tested to 3,600 lbs
- Connectors subjected to impact loading must be removed from service

ANSI Z359.1 requires (but is not limited to):
- Anchorage connectors shall be capable of withstanding a 5,000 lb load multiplied by the maximum number of personal fall arrest systems that may be attached to the anchorage connector
- An anchorage connector shall be attached to no more than one fall arrest system unless certified for such purpose.
- Connectors subjected to impact loading must be removed from service
- D-Rings, O-Rings, and oval rings shall be capable of withstanding a tensile load of 5,000 lbs

OSHA REGULATIONS UNDER TITLE 29 OF THE CODE OF FEDERAL REGULATIONS

OSHA's Occupational Safety and Health Standards for General Industry
Subpart D, Walking/Working Surfaces
- Fixed Ladders, Ladder Safety Devices_____1910.27 (d) (5)
- Safety Requirements for Scaffolding, Boatswain's Chairs _____1910.28 (j) (4)

Subpart F
- Powered Platforms and Building Maintenance ____1910.66
- Personal Fall Arrest Systems_____1910.66, Appendix C

Subpart R
- Agricultural Operations _____1910.267
- Telecommunications _____1910.268
- Electric Power Generation, Transmission and Distribution _____1910.269

OSHA's Safety and Health Standards for Construction
Subpart E, Personal Protective Equipment
- Safety Belts, Lifelines and Lanyards _____1926.104
- Safety Requirements for Scaffolding, Boatswain's Chairs _____1926.105

Subpart L, Scaffolding
- Boatswain's Chairs_____1926.450–454

Subpart M, Fall Protection
- Scope, Application and Definitions _____1926.500
- Duty to Have Fall Protection _____1926.501
- Scope, Application and Definitions _____1926.502
- Duty to Have Fall Protection _____1926.503

Subpart R, Scaffolding
- Fall Protection _____1926.750

Subpart M, Ladders _____1926.1053

ANSI Voluntary Consensus Standards
Fall Protection Systems for Construction and Demolition Operations

Fall Protection Systems for Construction and Demolition Operations _____A10.32–2004

General Industry

Minimum Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components _____Z359.1-1992 (R1999)

Ladders—Fixed—Safety Requirements _____A14.3-1992

New ANSI Z Requirements go into effect October 15, 2007. Check www.MSAnet.com for updates and details.

Fall Protection

Harnesses

TechnaCurv™ Full Body Harness

The TechnaCurv Full Body Harness throws a curve to the ordinary harness with many new features never before seen in a full body harness:

- Curvilinear Comfort System
- Visco-Elastic Shoulder padding
- Innovative web design
- Secure-Fit buckles
- Sorbtek fabric on shoulder and sub-pelvic pads
- Meets ANSI Z359.1, A10.32, all applicable OSHA regulations, and is CSA certified

In addition to the features above, the TechnaCurv harness is designed with downward adjusting torso straps on most models to ease adjustment. This is also the first harness on the market that allows you to order exactly the options you want, and only the options you want, through our Assemble-to-Order process. All these features combine to provide you with the most comfortable, versatile, unique, and safe harness available today.

And now, we're making a great harness even better! You will notice a few changes on your TechnaCurv Harness that will improve the functionality and comfort of the harness. These improvements include:

+ Addition of two Lanyard Clips on every harness, at no additional cost.
+ Addition of webbing length to the torso and leg strap portions of the harness to give you a wider range of adjustment. These additions will provide you with the perfect, most comfortable fit every time you put on your harness.

the CURVILINEAR COMFORT SYSTEM features:

Curvilinear Torso Webbing

- This patent-pending process curves the webbing around the neck area to help prevent chafing and discomfort on the neck that can be caused by some standard harnesses.

COMBINED WITH

Adjustable Y Back D-Locator Pad

- Allows complete adjustment of the back D-ring to provide proper harness fit
- Assists in moving the shoulder webbing away form the neck, providing additional comfort to the user.
- Ribbed web slots in back pad allow for easy back D Ring adjustment.
- A special polymer blend allows for optimal strength and minimal weight, giving you a lighter, more durable harness.

TO PROVIDE YOU WITH TOTAL COMFORT!

User's Neck

Webbing

- Soft, Flexible webbing allows the harness to move with you as you work for increased comfort.
- An innovative pattern design offers a cool, sporty appearance.

Shoulder Pads & Sub-pelvic Pad

Sorbtek™ Fabric:

- A highly breathable, lightweight material designed to wick moisture away from the body.

Visco-Elastic Shoulder Padding:

- Developed by NASA, Visco-elastic padding is more comfortable than traditional foam padding.
- Does not have memory and will not break down over time, offering superior comfort throughout the life of the harness.
- Automatically adjusts to every curve of your body
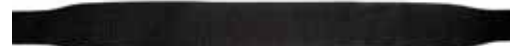
Secure-Fit™ Buckle

- Designed to ease donning, doffing, and adjustment.
- Single hand operation.
- Buckle release tabs move in opposite directions and are recessed inside the outer buckle dimensions to prevent accidental disengagement.
- Positive engagement windows allow you to see that the buckle is properly engaged. No need to try and listen for a "click" on a noisy job site.

Positive Engagement Window

Variable Width Webbing

- Width varies from 1-5/8" to 2-5/8".
- Distributes weight over a wider surface area to increase comfort during suspension/work positioning.

TechnaCurv Full Body Harnesses

Part No.	STYLE		PADDING		CHEST BUCKLE		LEG BUCKLES			D-RINGS		
	Pullover	Vestype	Shoulder	Sub-Pelvic	Secure-Fit	Qwik-Fit	Secure-Fit	Tongue	Qwik-Fit	Back	Chest	Hip
10041517		X				X			X	1	0	0
10041518	X								X	1	0	0
10041591		X				X		X		1	0	0
10041595		X				X		X		1	0	2
10041597	X							X		1	0	2
10041599		X	X			X		X		1	0	0
10041601	X		X					X		1	0	0
10041603		X	X			X		X		1	0	2
10041607		X				X		X		1	1	2
10041609	X							X		1	1	2
10041611		X	X			X		X		1	1	2
10041613	X		X					X		1	1	2
10041615		X	X	X		X	X			1	1	2
10041617	X		X	X			X			1	1	2
10052991		X	X			X			X	1	0	0
10052992		X	X		X				X	1	0	0
10052993		X	X			X		X		1	0	0
10052994		X	X		X			X		1	0	0
10052995		X	X		X		X			1	0	0
10052996		X	X			X			X	1	0	2
10052997		X	X		X				X	1	0	2
10052998		X	X			X		X		1	0	2
10052999		X	X		X			X		1	0	2
10053000		X	X		X		X			1	0	2

All harnesses listed here are Standard (STD) size. Other sizes are available.

TechnaCurv Tower Harness

In addition to the exciting features of the TechnaCurv Harness, the TechnaCurv Tower Harness:
- Utilizes variable width webbing in the sub-pelvic area to increase comfort and support when work positioning
- Incorporates an integral body belt and a removable saddle
  - Body Belt and saddle are constructed using a dual durometer pad and Sorbtek fabric for ultimate comfort
  - Body Belt includes two side D-rings and two accessory rings
  - Removable Saddle includes two side D-rings
    - ❖ Saddle height is adjustable
- D-ring position is adjustable

TechnaCurv Tower Harnesses include body belt and saddle.

Part No.	STYLE	PADDING		CHEST BUCKLE	LEG BUCKLES		D-RINGS		
	Vestype	Shoulder	Sub-Pelvic	Qwik-Fit	Secure-Fit	Tongue	Back	Chest	Hip
10048344	X	X	X	X	X		1	1	2
10048348	X	X		X		X	1	1	2

All harnesses listed here are Standard (STD) size. Other sizes are available.

TechnaCurv Construction Harnesses

TechnaCurv Construction Harnesses offer all of the exciting features of the TechnaCurv Harness with the added flexibility of incorporating a tool belt. There are two construction harnesses to choose from:
- With integral belt that includes a Dual Durometer back pad for superior comfort
- With Belt Loops for total flexibility of adding any belt of your choice

TechnaCurv Construction Harness with Belt Loops
Part No. 10053004

Belt Loops

TechnaCurv Construction Harness with Belt
Part No. 10054403

TechnaCurv Construction Harnesses include integral belt loops.

Part No.	STYLE	PADDING	CHEST BUCKLE		LEG BUCKLES			BELT LOOPS		D-RINGS	
	Vestype	Shoulder	Secure-Fit	Qwik-Fit	Secure-Fit	Tongue	Qwik-Fit	w/o belt	w/integral belt	Back	Hip
10053001	X	X		X			X	X		1	0
10053002	X	X	X				X	X		1	0
10053003	X	X		X		X		X		1	0
10053004	X	X	X			X		X		1	0
10053005	X	X	X		X			X		1	0
10053006	X	X		X			X	X		1	2
10053007	X	X	X				X	X		1	2
10053008	X	X		X		X		X		1	2
10053009	X	X	X			X		X		1	2
10053010	X	X	X		X			X		1	2
10054402	X	X		X		X			X	1	2
10054403	X	X	X			X			X	1	2
10054719	X	X	X		X				X	1	2

All harnesses listed here are Standard (STD) size. Other sizes are available.

TechnaCurv "No Metal Above the Waist" Harnesses

This harness was designed to keep all metal below the waist to reduce the potential for arc flashes. This potential is further reduced by adding the plastic covers over the metal components of the harness. In addition to the many features of the TechnaCurv Full Body Harness, the No Metal Above the Waist TechnaCurv Harness adds the following features:
- Fabric dorsal connector
- Fabric positioning loops
- Hardware covers on metal components
- Approximate weight is just 3.5 lbs
- Meets or exceeds OSHA, ANSI Z359.1, and is CSA certified

TechnaCurv "No Metal Above the Waist" Harnesses

Part No.	STYLE	LEG BUCKLES			ATTACHMENT POINT
	Pullover	Secure-Fit	Tongue	Qwik-Fit	Back
10050125	X	X			1
10053251	X			X	1
10059270	X		X		1

"No Metal Above the Waist"
TechnaCurv Harness
Part No. 10050125

Technacurv® Hi-Viz Construction Harness

This harness features:

- Curvilinear Comfort System combines curvilinear torso webbing with an adjustable Y back D-locator pad to keep the shoulder webbing away from the neck to prevent chaffing and to provide greater comfort
- Bright green webbing for greater visibility
- Visco Elastic Shoulder Padding automatically adjusts to every curve of your body, offering superior comfort throughout the life of the harness
- Sorbtek fabric on the shoulder padding wicks moisture away from the body
- Integral belt with Dual-Durometer back pad for superior comfort and back support
- Designed with downward adjusting torso straps to ease adjustments
- Soft, flexible webbing allows the harness to move with you as you work for increased comfort
- Utilizes variable-width webbing in the sub-pelvic area to increase comfort and support during suspension/work positioning
- Additional webbing length to the torso and leg straps provides a wider range of adjustments for the perfect fit
- Two integral Lanyard Clips
- Meets or exceeds OSHA regulations, ANSI Z359.1 and is CSA certified.

  *Webbing does not meet the requirements for high-visibilty clothing as defined in OSHA and ANSI.

TechnaCurv Hi-Viz Construction Harness
Part No. 10063654

Part No.	SIZE		STYLE	PADDING	CHEST BUCKLE	LEG BUCKLES	D-RINGS	
	STD	XLG	Vestype	Shoulder	Qwik-Fit	Tongue	Back	Hip
10063654	X		X	X	X	X	1	2
10063656		X	X	X	X	X	1	2

Technacurv® Picker's Harness

Available with all the exciting features of the TechnaCurv Harness, plus:

- 18" Integral Dorsal D-Extension with velcro closure provides easy access to the Back D-ring
- Dorsal D-Extension available as option 3 under the Dorsal D-option of the Assemble-to-Order Matrix

Part No.	Description
ANGHN151221331002	TechaCurv Picker's Harness

TechnaCurv Picker's Harness
Part No.
ANGHN151221331002

Workman™ Harness

The Workman Harness provides comfortable protection, due to its lightweight components and durable webbing. The vest-style harness, with optional hip D-Rings for work positioning, fits a wide range of body types and sizes. Color-contrasting thigh and torso straps simplify donning.

- Optimum quality at an economical price
- Comfortable
- Abrasion-resistant, strong, durable webbing
- Yellow polyester webbing for high visibility
- Web retainer collars to keep excess webbing neat
- Easy to don and adjust
- Choice of Qwik-Fit™ or Tongue-Buckle leg straps for easy adjustment
- Instructions in English, Spanish, and French
- Meets OSHA regulations, ANSI A10.32 & ANSI Z359.1, and is certified to CSA Z259.10-M90

Workman Harness
Part No. 10072479

Stand-Up Back D-Ring

Workman Harness
Part No. 10072491

Part No.	SIZE				CHEST STRAP	LEG BUCKLES		ATTACHMENT POINTS		INTEGRAL BACK PAD & TOOL BELT	SHOULDER PADS
	XSM	STD	XLG	SLX	Qwik-Fit	Tongue	Qwik-Fit	Back	Hip		
10072479		X			X	X		X			
10072480			X		X	X		X			
10072483		X			X	X		X	X		
10072484			X		X	X		X	X		
10072487		X			X		X	X			
10072488			X		X		X	X			
10072491		X			X		X	X	X		
10072492			X		X		X	X	X		
10072494	X				X		X	X	X	X	
10072495		X			X		X	X	X	X	
10072496			X		X		X	X	X	X	
10072497				X	X		X	X	X	X	
10077490	X				X		X	X	X	X	X
10077571		X			X		X	X	X	X	X
10077572			X		X		X	X	X	X	X
10077573				X	X		X	X	X	X	X

Workman™ Construction Harness

The Workman Construction Harness also offers shoulder pads and an integral backpad for added comfort during work positioning and a removable, tongue-buckle tool belt. Meets applicable OSHA regulations, ANSI A10.32 and ANSI Z359.1 requirements.

New!

Workman
Construction
Harness
Part No. 10077571

FP Pro® Harness

The FP Pro Harness provides comfortable protection even after long hours of use in extreme conditions due to its super lightweight features and durable webbing. The harness is available in cross-chest and vest styles, with optional hip D-rings for work positioning, and fits a wide range of body types and sizes. Color-contrasting thigh and torso straps simplify donning. The FP Pro Harness has the following features :

- Bright red polyester webbing for high visibility
- Lightweight design for increased comfort
- Meets all applicable OSHA standards, ANSI A10.32, and ANSI Z359.1

Web retainer collar to keep excess webbing neat

Also available with back & hip D-rings

Strong, durable, lightweight webbing

Covered label pack to protect labels from the environment and increase service life

FP Pro Harness Cross-chest Style Part No. 415842

Color contrasting torso & leg straps to simplify donning

Qwik-Fit (mating) leg straps allow for easy adjustment

Easy to use adjuster buckles

FP Pro Harness Vest Style Part No. 10033836

Back Pad provides additional comfort and support for work positioning applications

FP Pro Construction Harness with Integral Back Pad & Belt Part No. 10043033

Part No.	STYLE		SIZE		LEG BUCKLES		INTEGRAL BELT & BACK PAD	D-RINGS	
	Cross-Chest	Vest Style	STD	XLG	Tongue	Qwik-Fit		Back	Hip
415842	X		X			X		1	0
415844	X			X		X		1	0
415944	X		X			X		1	2
415946	X			X		X		1	2
415947		X	X			X		1	0
415949		X		X		X		1	0
415950		X	X			X		1	2
415952		X		X		X		1	2
10033830	X		X		X			1	0
10033831	X			X	X			1	0
10033833	X		X		X			1	2
10033834	X			X	X			1	2
10033836		X	X		X			1	0
10033837		X		X	X			1	0
10033839		X	X		X			1	2
10033840		X		X	X			1	2
10043033		X	X		X		X	1	2
10057087		X		X	X		X	1	2

Additional sizes available.

Fall Protection

Gravity™ Vest Style Harness

The Gravity Vest Style Harness design is the traditional choice for confined space rescue and fall arrest. The back D-ring ensures the user is in an up-right position, eliminating the need for shoulder D-rings and a spreader bar for confined space applications. Available in nylon, polyester, and reflective nylon. Tongue buckle leg straps available upon request. Meets ANSI Z 359.1 and OSHA standards, and is CSA certified.

Gravity Vest Style Harness
Part No. SSH30420060

Gravity™ Cross-Over Harness

The Gravity Cross-Over Harness is a multi-purpose full body harness. The unique cross-over design allows for adjustment of both the back and chest D-rings. The harness is suitable for controlled descent, positioning, ladder climbing, rescue, and fall arrest. Available in nylon, polyester, and reflective nylon. Meets ANSI Z 359.1 and OSHA standards, and is CSA certified.

Gravity Harness with Reflective Nylon
Part No. SSH80920006

Reflective Orange Nylon

Part No.	STYLE		WEBBING		LEG BUCKLES		REFLECTIVE		D-RINGS		
	Vestype	Cross-Chest	Nylon	Polyester	Tongue	Qwik-Fit	Orange	Yellow	Back	Chest	Hip
SSH30420060	X		X			X			1	0	0
SSH30425060	X		X		X				1	0	0
SSH30430064	X			X		X			1	0	0
SSH30435064	X			X	X				1	0	0
SSH70920006		X	X			X		X	1	0	0
SSH70920008		X	X			X	X		1	0	0
SSH80920000		X	X			X			1	1	2
SSH80925000		X	X		X				1	1	2

Nylon Harnesses are constructed with red/blue webbing, and polyester harnesses are constructed with red/black webbing.
All harnesses listed above are Standard (STD) size. Additional sizes available. All harnesses listed above have Qwik-Fit chest straps.

Derrick™ Harness

The Derrick harness was created with the derrick worker in mind. This harness incorporates an integral shock absorber that also serves as a back D-ring extension to allow for easy lanyard connection. The integral belt consists of a 4" wide web support strap and a rear D-ring for positioning/restraint applications. The harness also includes a comfortable saddle for positioning and climb assist. Meets ANSI Z359.1, ANSI A10.14, and OSHA standards, and is CSA certified.

Part No.	Description	Waist
SSH31535D364	Derrick Harness, Vest Style, tongue buckle leg straps, red/black polyester webbing, large belt	40"-48"

All harnesses listed above are Standard (STD) size. Additional sizes available.

Derrick Harness
Part No. SSH31535C

BUCKLE INFORMATION
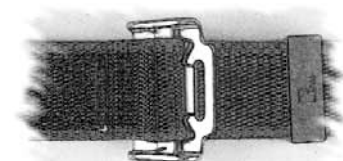
Friction Buckle

Tongue Buckle

Qwik-Fit™ (Mating) Buckle

ArcSafe™ Harness

The ArcSafe harness is SEI-certified to the requirements of the ASTM F887-05 standard for arc flash protection up to 40 cal/cm2 and is designed to meet the needs of utility and maintenance workers.

Additional features

For safety:
- Nylon web loop attachment points
- Reduce overall harness weight
- Reduce metallic components
- Meets all applicable OSHA regulations and ANSI Z359.1 & A10.32 standards
- Certified to CSA Z259.10-M90 classes A, D, L, P

For versatility & comfort:
- Y-shaped back web loop locator pad
- Allows for effortless adjustment of the back web loop
- Provides comfort by moving the webbing away from the wearer's neck
- Color-coded torso straps to simplify donning
- Downward-adjusting torso straps to ease adjustment
- Optional integral shock-absorber
- Choice of Vest or Cross-Chest harness style
- Choice of Qwik-Fit or Tongue Buckle leg straps
- Optional front attachment loops for climbing, personnel riding, or rescue applications

Optional Integral Shock-Absorber

ArcSafe Cross-Chest Harness

Front attachment loops can be tucked away when not in use

Optional Hip D-Loops

ArcSafe Vest-Style Harness

ArcSafe Chest-Style Harnesses

All styles include Back Web Loops

Part No.	SIZE		LEG BUCKLES		ATTACHMENT POINTS		INTEGRAL SHOCK ABSORBER	BELT LOOPS
	STD	XLG	Qwik-Fit	Tongue	Hip	Front		
10070459	X			X	X			X
10070460		X		X	X			X
10070463	X			X	X	X		
10070464		X		X	X	X		
10070467	X			X	X		X	
10070468		X		X	X		X	
10070471	X		X		X	X		
10070472		X	X		X	X		
10070475	X			X				
10070476		X		X				
10070479	X			X			X	X
10070480		X		X			X	X
10060114	X		X			X	X	
10060115		X	X			X	X	
10060110	X		X			X		
10060111		X	X			X		
10060105	X		X				X	
10060106		X	X				X	
10060101	X		X					
10060102		X	X					
10074530	X		X		X			
10074561		X	X		X			
10074564	X		X		X		X	
10074565		X	X		X		X	

ArcSafe Vest-Style Harnesses

All styles include Back Web Loops and Qwik-Fit Chest Strap

Part No.	SIZE		LEG BUCKLES		ATTACHMENT POINTS		INTEGRAL SHOCK ABSORBER	BELT LOOPS
	STD	XLG	Qwik-Fit	Tongue	Hip	Front		
10070423	X			X	X	X		
10070424		X		X	X	X		
10070427	X			X				
10070428		X		X				
10070431	X		X					
10070432		X	X					
10070435	X		X				X	
10070436		X	X				X	
10070439	X		X		X	X		
10070440		X	X		X	X		
10070443	X		X		X			
10070444		X		X	X			
10070447	X			X	X	X		X
10070448		X		X	X	X		X
10070451	X			X	X			X
10040425		X		X	X			X

Fall Protection

Thermatek™ Harness

The Thermatek Harness is a Vest Style harness with many features, including:
- High visibility green webbing
- Kevlar (60%) / Nomex (40%) blend webbing that is resistant to chemicals, weld splatter, and other high heat applications
- Bright, contrasting colors of webbing and stitching allows for easier inspection
- Qwik-Fit Leg Straps for easy connection
- Meets ANSI A10.14 and OSHA standards
- CSA certified
- SEI certified

Thermatek Harness
Part No. 10020062

Part No.	CSA Part No.	Description	Back	Hip
10020062	10020068	Standard size, Qwik-Fit (mating) leg straps	1	2
10020066	10020070	X-Large size, Qwik-Fit (mating leg straps	1	2

"No Metal Above the Waist" Harness

The "No Metal Above the Waist" Harness is a pullover style harness specifically designed with the utility industry worker in mind. This comfortable pullover style harness provides easy donning and doffing and one-point adjustment. In order to maintain a "No Metal Above the Waist" configuration, this harness has the adjustment point below the waist and an Integral Dyna-Brake Shock Absorber at the back D-ring location eliminating metal at the dorsal connection point.

"No Metal Above the Waist" Harness is available with side positioning loops for work positioning and travel restriction applications. All variations of the "No Metal Above the Waist" Harness meet ANSI Z359.1, ANSI A10.14, and OSHA regulations.

Part No.	Description	Back	Hip
501390	Standard size, nylon, Integral Dyna-Brake Shock Absorber, tongue buckle leg straps	1	2
415211	X-Large size, nylon, Integral Dyna-Brake Shock Absorber, tongue buckle leg straps	1	2

Additional sizes available.

"No Metal Above the Waist"
Harness
Part No. 501390

Harness Accessories

Miscellaneous Harness Accessories

A Back Pad (P/N 507144) snaps into the hip D-rings of Pullover and Vestype Harnesses and adds additional lower lumbar support while work positioning. Shoulder pad (P/N 10028444) may be snapped around the shoulder straps and under the back D-ring pad of the harness to add comfort.

Double D-ring Extension
Part No. 10043147

Lanyard Connector Adapter
Part No. 505318

Back Pad
Part No. 507144

Shoulder Pad
Part No. 10028444

Part No.	Description
505318	Lanyard Connector Adapter, nylon, 1 D-ring, 18" (Back D-Ring Extension)
507144	Economic Back Support Pad, nylon
10028444	Shoulder pad
10043147	Double D-ring Extension

Body Belts

MSA lightweight body belts are used for travel restriction or work positioning). Body belts are available in nylon or polyester webbing. Unique single pass friction buckles allow for a wide range of waist adjustment while tongue buckles adjust to a specific waist size. A 3 or 4 inch wide body pad is available on most models for additional comfort while work positioning. D-rings are available on the back of the belt for travel restriction and on the hips for work positioning. Multi-purpose body belts include a 3-inch wide body pad and seat strap which provides for additional comfort while work positioning for long periods of time.

Part No.	Size	Description
415275	Large	Nylon, tongue buckle, 3" body pad, 2 fixed D-rings
415276	Medium	Nylon, tongue buckle, 3" body pad, 2 fixed D-rings
415289	Large	Nylon, tongue buckle, 3" body pad, 1 fixed D-ring
415290	Medium	Nylon, tongue buckle, 3" body pad, 1 fixed D-ring

Part No. 415276
- Tongue buckle nylon belt
- 2 fixed D-rings
- 3" body pad

Shock-Absorbing Lanyards

Energy absorbing lanyards are a component of a personal fall arrest system. They provide a means of connection between the back (dorsal) D-ring of MSA full body harnesses and a qualified anchorage and anchorage connector. The energy absorber keeps fall arrest forces below ANSI and OSHA limits and deceleration distance is controlled to a maximum of 42 inches. The lanyard is available in strap, rope, and wire rope configurations with a variety of snaphooks.

Workman™ Energy-Absorbing Lanyards

Workman energy-absorbing lanyards are lightweight with a low-profile body. The shock absorber includes a clear, durable protective cover over the labels to increase service life and allow for easy inspection.

Features
- Tear-tape design to keep fall arrest forces below 900 lbf.
- Choice of single or twin-leg configurations
- Choice of adjustable or tie-back configurations
- Meets ANSI Z359.1-1992 (R1999), ANSI A10.32, applicable OSHA regulations, and is certified to CSA Z259.11-05 E4

Workman Energy-Absorbing Lanyard
Part No. 10072472

Workman Energy-Absorbing Lanyard
Part No. 10072474

Workman Energy-Absorbing Lanyard
Part No. 10076124

Workman Energy-Absorbing Lanyard
Part No. 10072473

Workman Energy-Absorbing Lanyard
Part No. 10073708

Workman Energy-Absorbing Lanyard
Part No. 10072475

Workman Shock-Absorbing Lanyards

Part No.	Harness Connection	Anchorage Connection	Twin	Single	Tie-Back
10072472	LC	LC		X	X
10072473	LC	(2) LC	X		X
10072474	LC	LC		X	
10073708	LC	(2) LC	X		
10072475	LC	(2) GL3100	X		
10076124	LC	GL3100		X	

ArcSafe™ Shock-Absorbing Lanyard

The ArcSafe shock-absorbing lanyard is SEI-certified to the requirements of the ASTM F887-05 standard for electrical arc flash protection up to 40 cal/cm^2.
- Limits fall arrest forces to 900 lbf or less
- Constructed of nylon webbing
- Includes sewn loop on shock-absorber end, and LS snaphook on lanyard leg
- Incorporates a protective cover over the shock-absorber
- Adjustable in length
- Choice of single- or twin-leg versions

ArcSafe Single-Leg Shock-Absorbing Lanyard

ArcSafe Twin-Leg
Shock-Absorbing Lanyard

Part No.	Harness Connection	Anchorage Connection	Twin	Single
10060139	Sewn Loop	LS Snap		X
10060140	Sewn Loop	(2) LS Snap	X	

Fall Protection

FP5K™ Tie-Back Shock-Absorbing Lanyard

- Uses the FP5K Carabiner, a new Tie-back lanyard connector
    - 5000-pound gate strength in any direction allows the FP5K Carabiner to be tied back directly to the lanyard
    - Unique carabiner body shape helps avoid confusion with standard connectors not designed for tie-back applications
    - FP5K carabiner design allows for maximum clearance inside the body of the carabiner (1" Gate Opening)
- Available in web or cable version
- Web version utilizes Monster-Edge™ Webbing with 12,000-pound minimum breaking strength
    - Monster-Edge webbing is designed for increased abrasion resistance
    - Internal wear indicator consists of two yellow threads that, when visible, alert a user as to when the lanyard should be removed from service due to severe abrasion
- Utilizes the Sure-Stop Shock Absorber to keep fall arrest forces below 900 lbf
- Available in both single and twin-leg configurations
- Meets OSHA regulations, ANSI Z359.1-1992 (R1999), ANSI A10.32 and is CSA certified.

MONSTER EDGE™ PAT# 5,419,951

Section of Monster Edge Webbing

Internal wear indicator

5000-pound gate strength in any direction.

FP5K Carabiner

The outer side of the gate has a knurled surface to provide a secure grip on the gate when opening. The inner side of the gate has flattened edges to keep lanyard/gate contact at a minimum.

Specially designed safety recess inside the body of the carabiner provides a place for the lanyard to rest when tied back.

Part No. 10047086

Part No. 10047087

Part No. 10047084

Part No. 10056762

Part No. 10047085

Part No. 10056763

Part No.	Description
10047084	FP5K Tie-Back Lanyard, Nylon Web, 6' Adjustable Length, with HL2000 snaphook on one end and FP5K Carabiner on the other end
10047085	Twin-leg FP5K Tie-Back Lanyard, Nylon Web, 6' Adjustable Length, with HL2000 snaphook in center (attaches to back D-ring) and FP5K Carabiners on each leg.
10047086	FP5K Tie-Back Lanyard, Cable, 6' Fixed Length, with HL2000 snaphook on one end and FP5K Carabiner on the other end
10047087	Twin-leg FP5K Tie-Back Lanyard, Cable, 6' Fixed Length, with HL2000 snaphook in center (attaches to back D-ring) and FP5K Carabiners on each leg
10052549	FP5K Tie-Back Lanyard, Nylon Web, 6' Adjustable Length, with LS snaphook on one end and FP5K Carabiner on the other end
10052611	Twin-leg FP5K Tie-Back Lanyard, Nylon Web, 6' Adjustable Length, with LS snaphook in center (attaches to back D-ring) and FP5K Carabiners on each leg.
10056762	FP5K Tie-Back Restraint Lanyard, Nylon Web, 5' Adjustable Length, with LS snaphook on one end and FP5K Carabiner on other end
10056763	Twin-leg FP5K Tie-Back Restraint Lanyard, Nylon Web, 5' Fixed Length, with LS snaphook in center (attaches to back D-ring) and FP5K Carabiners on each leg

FP Diamond™ Shock-Absorbing Lanyard

The FP Diamond Shock-Absorbing Lanyard raises the standard for shock-absorbing lanyards with these exciting features:
- Durable polyester sheath for increased abrasion and UV resistance
- Keeps fall arrest forces below 900 lbf
- Available in a single or twin-leg configuration
- Highly visible deployment tag
- Pouchless design
  - ■ More comfortable to wear
  - ■ Lighter weight
- ATO ordering flexibility allows you to order the exact options, and only the options, you want
- Meets OSHA regulations, ANSI Z359.1-1992 (R1999),ANSI A10.32, and is CSA certified

DuPont™ **Teflon®** fabric protector

Part No. 10023932

Lightweight, streamlined design

Teflon® fabric protector provides water, stain, and mildew resistance.

Strong & durable polyester sheath for increased abrasion and UV resistance
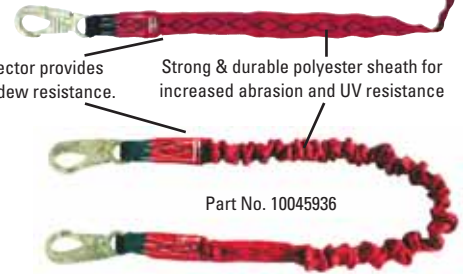
Part No. 10045936

FP Diamond Expanyard

In addition to the exciting features of the FP Diamond Lanyard, the FP Diamond Expanyard features:
- Elastic design reduces trip hazards and snag hazards
- 6' Diamond Expanyard contracts to 4.5'

FP Diamond with Integral D-ring Extension

In addition to the exciting features of the FP Diamond Lanyard, the FP Diamond with Integral D-ring Extension features:
- 100% tie-off while transitioning from the use of the shock-absorbing lanyard to the use of a self-retracting lanyard and vice-versa
- 4-1/2' length
- GL3100 snaphooks on anchor end of the shock-absorbing legs are compatible with most concrete forms allowing for a variety of applications
- Dorsal D-ring attachment on short leg allows easy access to back D-ring when connecting to a self-retracting lanyard

Diamond Lanyard with Integral D-ring Extension
Part No. 10059837

Part No. 10023970

Part No. 10053013

Swivel Snaphook on the Twin-leg FP Diamond Lanyard prevents the lanyard from tangling during use.

Part No. 10045938

Polyester, single piece construction, fixed length, Shock-Absorbing Lanyard

Part No.	Harness Connection	Anchorage Connection	Expanyard	Twin-Leg	D-ring Extension	4.5'	5'	6'
10023932	HL2000	HL2000						X
10023933	HL2000	HL64						X
10023970	Swivel HL2000	(2) HL2000		X				X
10023971	Swivel HL2000	(2) HL64		X				X
10023936	HL2000	HL2000					X	
10023937	Swivel HL2000	(2) HL2000		X			X	
10045936	HL2000	HL2000	X					X
10045938	Swivel HL2000	(2) HL64	X	X				X
10047290	Swivel HL2000	(2) GL3100	X	X				X
10053011	LS Snap	LS Snap						X
10053012	LS Snap	GL3100						X
10053013	LS Snap	(2) GL3100		X				X
10053014	LS Snap	LS Snap	X					X
10053015	LS Snap	GL3100	X					X
10053016	LS Snap	(2) GL3100	X	X				X
10059837	Swivel LS Snap	(2) GL3100		X	X	X		

TEFLON® is a registered trademark of DuPont is used under license by MSA.

The 6' Diamond Expanyard offers a full 6' range of motion when in use. It contracts to 4.5' when not in use to reduce trip and snag hazards.

Fall Protection

Sure-Stop Shock-Absorbing Lanyards

- Uses a tear tape design to keep fall arrest forces below 900 lbf
- Meets ANSI Z359.1-1992 (R1999), ANSI A10.32 and applicable OSHA regulations, and is CSA certified
- Available in single or twin-leg configurations
- Clear shock-absorber cover protects labels

Part No. SWL60645D

Part No. SWL40400206LS

Part No. SNL4048406LS

Part No. SCL4067304LS

Part No. SWLP0635A

Shock-Absorbing Lanyards with 1/2-inch, nylon rope

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Length		Type	
				4'	6'	Adjustable	Fixed
SNL4048406LS*	Sure-Stop	LS Snap	LS Snap		X		X

*Not CSA certified

Shock-Absorbing Lanyards with 1/4-inch Wire Rope, Vinyl Coated

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Length		Type	
				4'	6'	Adjustable	Fixed
SCL4067306LS	Sure-Stop	LS Snap	LS Snap		X		X

Expanyard Shock-Absorbing Lanyards with 6-ft length, nylon strap

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Twin-Leg	1-3/4" Strap	1" Strap
SWL60645D*	Sure-Stop	Sewn Loop	(2) HL64	X	X	
SWL60645B*	Sure-Stop	Sewn Loop	(2) LI Snap	X		X

*Not CSA certified

Part No. 10056764

- Allows the user to use any style of approved carabiner for anchor connector end
- Uses a tear tape design to keep fall arrest forces below 900 lbf.
- Clear shock-absorber cover protects labels
- Meets ANSI Z359.1 and applicable OSHA regulations

Shock-Absorbing Lanyards with 1-inch strap

Part No.	Material		Shock Absorber	Harness Connection	Anchorage Connection	Length		Type		
	Nylon	Polyester				4'	6'	Twin-Leg	Adjustable	Fixed
10056764	X		Sure-Stop	RM Snap	(2) Sewn Loops	X		X		X
SWL4068704LS	X		Sure-Stop	LS Snap	LS Snap	X				X
SWLP0635A		X	Sure-Stop	Sewn Loop	(2) LS Snap		X	X		X
SWL40400206LS	X		Sure-Stop	LS Snap	(2) LS Snap		X	X		X
SWL40400206LSH	X		Sure-Stop	LS Snap	(2) HL64		X	X		X
SWL4068706LS	X		Sure-Stop	LS Snap	LS Snap		X			X

*Not CSA certified

Dyna-Brake® Shock-Absorbing Lanyards

- Strong and durable
- Uses rip-stitch technology to keep fall arrest forces below 900 lbf
- Available in single or twin-leg configurations and with a variety of snaphooks
- Meets ANSI Z359.1-1992 (R1999), ANSI A10.32, and OSHA standards

Part No. 10015877
- 6' x adj. 1" wide nylon web twin lanyard
- HL2000 self-locking snaphook on one end and 2 GL3100 self-locking snaphooks on other ends
- Compatible with most concrete forms

Part No. 10021663
- 6' x adj. 1" wide nylon webbing
- HL2000 self-locking snaphooks

Part No. 501563
- 6' x fixed 1" wide polyester web twin lanyard
- RL20 self-locking snaphooks

Part No. 501562
- 6' x adj. 1" wide nylon web twin lanyard
- RL20 self-locking snaphooks

Shock-Absorbing Lanyards with 1-inch strap

Part No.	Material		Shock Absorber	Harness Connection	Anchorage Connection	Length		Type		
	Nylon	Polyester				4'	6'	Twin-Leg	Adjustable	Fixed
10021661*	X		Dyna-Brake	HL2000	(2) HL63		X	X	X	
10021663*	X		Dyna-Brake	HL2000	HL2000		X		X	
10021664*	X		Dyna-Brake	HL2000	HL2000		X			X
10021668*	X		Dyna-Brake	HL2000	(2) HL2000		X	X	X	
10021669*		X	Dyna-Brake	HL2000	(2) HL2000		X	X	X	
10015877*	X		Dyna-Brake	HL2000	(2) GL3100		X	X	X	
501222*+	X		Dyna-Brake	RL20	RL20		X		X	
501226*+	X		Dyna-Brake	Rl20	RL20		X			X
501235*+		X	Dyna-Brake	RL20	RL20		X		X	
501322*	X		Dyna-Brake	HL2000	HL2000		X			X
501561*	X		Dyna-Brake	RL20	(2) RL20		X	X		X
501562*	X		Dyna-Brake	RL20	(2) RL20		X	X	X	
501563*		X	Dyna-Brake	RL20	(2) RL20		X	X		X
501564*		X	Dyna-Brake	RL20	(2) RL20		X	X	X	

*Not CSA certified   + SEI Certified

Expanyard Shock-Absorbing Lanyards

The Expanyard Shock-Absorbing Lanyard is designed to stretch to a six-foot length. When relaxed, it stays close to the user's body, reducing the possibility of trips and snags.

Part No. 10015900

Part No. 10013456

Expanyard Shock-Absorbing Lanyards with 6-ft length, nylon strap

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Twin-Leg	1-3/4" Strap	1" Strap
501752	Dyna-Brake	RL20	RL20			X
501574	Dyna-Brake	RL20	(2) RL20	X		X
10015900*	Dyna-Brake	HL2000	HL2000			X
10013456*	Dyna-Brake	HL2000	(2) HL2000	X		X

*Not CSA certified

"No Metal Above The Waist" Shock-Absorbing Lanyard

The "No Metal Above the Waist" shock-absorbing lanyard was specifically designed to work in conjunction with the "No Metal Above the Waist" harness, which was designed for the utility industry worker. To maintain the "No Metal Above the Waist" configuration, this shock-absorbing lanyard has a 9" sewn loop on one end which attaches to the back (dorsal) attachment point on the "No Metal Above the Waist" harness.

"No Metal Above the Waist" Shock-Absorbing Lanyard, with Dyna-Brake, polyester 1" strap, fixed 6' length

Part No.	Harness Connection	Anchorage Connection
501580	Sewn Loop	RL20

Part No. 501580

Shock-Absorbing Lanyards

Part No. 10021656
- 6' x adj. 1/2" dia. nylon rope
- HL2000 self-locking snaphooks

Part No. 10021655
- 6' x 7/32" dia. vinyl-coated wire rope
- HL2000 self-locking snaphooks

Part No. 10021653
- 6' x 7/32" dia. wire rope twin-leg
- HL2000 self-locking snaphooks

Shock-Absorbing Lanyards with 1/2-inch, nylon rope

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Length 6'	Type Adjustable	Type Fixed
501220	Dyna-Brake	RL20	RL20	X	X	
10021656*	Dyna-Brake	HL2000	HL2000	X	X	

Shock-Absorbing Lanyards with 1/4-inch Wire Rope, Vinyl Coated, Fixed Length

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Length 6'	Type Twin-Leg
501244	Dyna-Brake	RL20	RL20	X	
10021655*	Dyna-Brake	HL2000	HL2000	X	
10021653*	Dyna-Brake	HL2000	(2) HL2000	X	X

*Not CSA certified

Tie-Back™ Shock-Absorbing Lanyard

The integral adjustable D-ring of the MSA Tie-Back lanyard allows for a compatible means of connection, minimizes the potential for roll-out, and eliminates the necessity of a separate anchorage connector. The integral adjustable D-ring allows the MSA Tie-Back Lanyard to accommodate a wide variety of anchorage point shapes and sizes.
The MSA Tie-Back Lanyard features:
- Integral Dyna-Might shock absorber or Dyna-Brake shock absorber
- Available in Twin-Leg configuration for 100% tie-off
- Maximum arrest force of 900 lbf

Twin-Leg Tie-Back
Shock-Absorbing Lanyard
Part No. 10021671

Tie-Back Shock-Absorbing Lanyard with 1″ Strap, 6′ Fixed Length, Nylon

Part No.	Material Nylon	Shock Absorber	Harness Connection	Anchorage Connection	Type Twin-Leg
10021670	X	Dyna-Brake	HL2000	HL2000	
10021671	X	Dyna-Brake	HL2000	(2) HL2000	X
10021673	X	Dyna-Brake	HL2000	(2) HL64	X
10011792	X	Dyna-Might	HL2000	HL2000	
10011649	X	Dyna-Brake	RL20	(2) RL20	X

Tie-Back Shock-Absorbing Lanyard
Part No. 10021670

Shock-Absorbing Sub-Assembly

The Shock-Absorbing Sub-Assembly may be connected to a compatible lanyard to create a non-integral lanyard connector subsystem for fall arrest.

Part No. 10021654
- Nylon webbing (poly. P/N 10021658)

Part No. SSA4002LS

Shock-Absorbing Devices, Nylon

Part No.	Shock Absorber	Harness Connection	Anchorage Connection	Length 6'
10021654*	Dyna-Brake	HL2000	D-ring	22″
SSA4002LS	Sure-Stop	LS Snap	D-ring	

*Not CSA certified

Restraint Lanyards

Restraint lanyards are primarily used for travel restriction and work positioning. Lanyards for travel restriction are used to restrain a worker from reaching a fall hazard. Lanyards for work positioning are used for stabilizing a worker at an elevation. They can be ordered in fixed or adjustable lengths. Each lanyard comes with a forged steel, zinc-plated self-locking snaphook attached to each end. Meets ANSI and OSHA standards. Models with CSA part numbers are CSA certified.

Part No. 505204

Part No. 505201

Part No. SWL3268704LS

Part No. 505166

Part No. SNL3248404LS

Restraint Lanyards with 1-inch, nylon strap

Part No.	CSA Part No.	Harness Connection	Anchorage Connection	Length		Type	
				4'	6'	Adjustable	Fixed
505088	—	HL2000	HL2000		X	X	
505097	—	HL2000	HL2000		X		X
505197	415715	RL20	RL20		X		X
505204	415719	RL20	RL20		X	X	
SWL3268704LS	SWL3268704LS	LS Snap	LS Snap	X			X
SWL3268706LS	SWL3268706LS	LS Snap	LS Snap		X		X

Restraint Lanyards with 5/8-inch, nylon rope, fixed length

Part No.	CSA Part No.	Harness Connection	Anchorage Connection	Length	
				4'	6'
415108	—	RL20	RL20	X	
505166	—	HL2000	HL2000		X
SNL3248406LS	SNL3248406LS	LS Snap	LS Snap		X

Restraint Lanyards with 1/2-inch, nylon rope, 6-ft length

Part No.	Harness Connection	Anchorage Connection	Type	
			Adjustable	Fixed
505002	HL2000	HL2000		X
505012	HL2000	HL2000	X	
505200	RL20	RL20		X
505201	RL20	RL20	X	

Fall Protection

Restraint Lanyard with 7/32-inch, cable, vinyl coated, fixed 6-ft length

Part No.	Harness Connection	Anchorage Connection
505063	HL2000	HL2000

Part No. 505063
- 5' x 7/32" vinyl-coated wire rope
- HL2000 self-locking snaphooks

Restraint Lanyards with Sewn Loop

Part No.	Description
505165	Lanyard, nylon, sewn loop one end, HL2000 snaphook on other end, 6-ft, fixed length
505217	Lanyard, nylon, sewn loop one end, RL20 snaphook on other end, 6-ft, adjustable length

Rebar Assembly
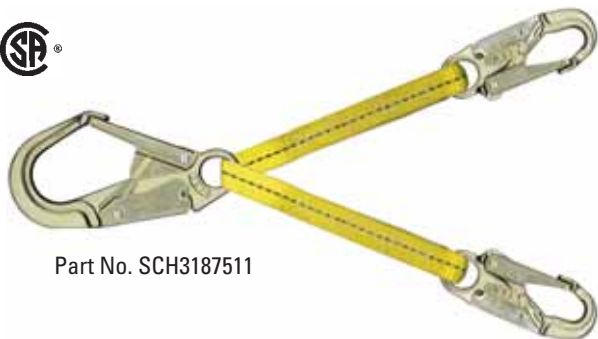
Part No. SCH3187511

Part No. 10044811
- Rebar chain assembly with GL3100 self-locking snaphook
- Compatible with most concrete forms

Part No.	Description
415957	Rebar strap assembly, Large snaphook with 2.5" (64mm) gate
10044811*	Rebar chain assembly, GL3100 snaphook with 2.25" (57mm) gate
SCH3187511	Rebar web assembly, 18" legs, with sliding Large snaphook

*Not CSA certified

Lineman's Pole Strap
Part No. 415834

Lineman's Pole Strap

Part No.	Description
415834	Lineman's pole strap, nylon, adjustable, to maximum length of 70"

Sure-Grab™ Positioning Lanyard

Part No.	Description
SNYR537DH306	Sure-Grab positioning lanyard, manual, closed body, c/w 5/8" x 6' blue Static Kernmantle, chrome locking swivel snaphook, right-handed version

Sure-Grab Positioning Lanyard
Part No. SNYR537DH306

Anchorage Connectors

- Have a minimum breaking strength of 5,000 lb.
- Compatible for use with MSA fall arrest and confined space entry/retrieval components

Anchorage Connector Strap

- Standard 5-ft. length, custom lengths available
- D-ring on one end and a sewn loop on the other end

Anchorage Connector
Strap Part No. 505282

Anchorage Connector Chain

- Temporary anchorage connector
- Useful near sharp edges or in high heat environments

Anchorage Connector Chain
Part No. 10003206

Rail-Slider™

- Provides fall protection during horizontal movement on railway bridges
- Quick and easy installation
- 2 sizes available

Rail-Slider
Part No. SFPRS6000

Suretyman Anchorage Sling
Part No. SFP2267404

Suretyman™ Anchorage Sling

- 1″ nylon tube webbing sewn into an endless loop
- Available in 2′, 4′, and 6′ lengths
- Can be hitched to an anchorage point using various configurations

ManSafe Freestanding Constant Force Post

- Does not attach to the working surface
- Installer will never have to lift more than 55 lbs (25 kg) at any time
- Used on nominally flat roofs up to a maximum pitch of 5 degrees
- Tested and approved for use on concrete, single-ply membrane, asphalt-sanded, asphalt-stone chipped, and steel roof profiles
- Post is omni-directional

ManSafe Freestanding
Post*
Part No. 10055719

* Post D-ring (Part No. 10038363) must be purchased separately.

PointGuard™ Anchorage Connector Strap

The PointGuard Anchorage Connector provides a secure point of attachment for residential and concrete construction applications. When the anchorage connector is no longer needed a worker can simply cut the protruding strap and throw it away. The PointGuard Anchorage Connector is:

- Quick and easy to install
- Economical
- Available in 2 models -
  - Residential Construction
    - ❖ A standard length of 3′
    - ❖ Meets all applicable OSHA regulations as well as ANSI A10.14 and ANSI Z359.1
  - Concrete Construction
    - ❖ A standard length of 4′
    - ❖ Includes protective sheath
    - ❖ Meets all applicable OSHA regulations as well as ANSI A10.14
- Durable Polyester Webbing with 5,000-pound minimum breaking strength
- 400-pound (182 kg) capacity

PointGuard Residential
Part No. 10042792

PointGuard Concrete
Part No. 10042794

Anchorage Cable Sling

- Standard lengths of 2′, 4′, and 6′, custom lengths available
- Vinyl Coated
- 1/4″ Galvanized Cable

Anchorage Cable Sling
Part No. SFP3267504

Part No.	Description
505282	Anchorage connector strap, nylon, 5′
505298	Anchorage connector strap, polyester, 5′
10003206	Anchorage connector chain
10023490	Double D-ring anchorage connector strap with D-ring on each end
10042792	PointGuard residential anchorage connector strap, 3′ with D-ring
10042794	PointGuard concrete anchorage connector strap, 4′ with D-ring
SFP2267404	Suretyman anchorage sling, 4′ length
SFP2267503	Double D-ring Anchorage Connector Strap, 3′ length
SFP2267506	Double D-ring Anchorage Connector Strap, 6′ length
SFP3267504	Anchorage cable sling, 4′ length
SFPRS6000	Rail-Slider, steel, galvanized, for 80 - 136 # rail, used on train/crane type rail, [carabiner required - sold separately (see page 167)]
10030608	Rail-Slider, steel, galvanized, for 141 # rail, used on train/crane type rail, [carabiner required - sold separately (see page 167)]
10055717	ManSafe Freestanding Constant Force Post, 440 lbs (200 kg)
10055718	ManSafe Freestanding Constant Force Post, 660 lbs (300 kg)
10055719	ManSafe Freestanding Constant Force Post, 880 lbs (400 kg)
10055716	220 lb (100 kg) Upgrade kit
10038363	Post D-ring
SFP3267506	Anchorage Cable Sling, 6′ length

Fall Protection

BeamGrip™
- Attaches to I-beam flange - no tools required
- Optional D-ring insert (P/N 506643) and/or swivel D-ring (P/N 506673) can provide anchorage connection for one or two persons (D-rings sold separately)

BeamGrip
Part No. 506682
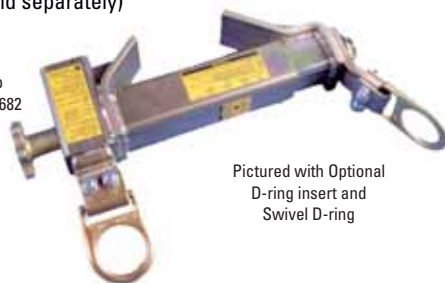
Pictured with Optional
D-ring insert and
Swivel D-ring

BeamGlide Trolley Removable Model
Part No. 506266

BeamGlide™ Trolley
- Provides horizontal mobility - keeps anchorage connector directly overhead
- Sizing to fit all beams

Anchorage Connector Extension
- Vinyl coated
- 1/4" galvanized cable
- Standard 5' length

Anchorage Connector
Extension
Part No. 505233

D-Plate
Part No. 506632

D-Plate Anchorage Connector
- Provides permanent anchorage point
- Bolts to beams or columns
- Also available with 8"x 8" back-plate made of black anodized aluminum, galvanized steel, or stainless steel for attachment to concrete walls

FP Stryder™ Anchorage Connector
- Easy, single-hand installation
- Low friction wear pads with Teflon allow the FP Stryder Anchorage Connector to glide effortlessly along the beam flange
- Lightweight - only 4.5 pounds!
- Integral load indicator alerts user if unit has been exposed to a fall
- Versatile design allows for mounting overhead or at worker's feet
- Vernier adjustability allows for a secure fit and 1/4"adjustment increments
- Easy to use, push button adjustment - No Pins to be lost!
- 2 models available to fit most beam sizes
  - ■ Standard version fits beam flange widths from 4" to 14"
  - ■ XL version fits beam flange widths from 14" to 24"
- 400-pound working capacity
- Field serviceable

FP Stryder
Part No. 10051455

Bolt D-ring with Hole
Part No. 10003213

Bolt D-ring with Hole
- Permanent anchorage connector
- Attaches to bottom of I-beam flange, user supplies bolt
- Designed for horizontal installation

Permanent Roof Anchor
- All steel construction
- Fits all pitches of roof trusses or rafters
- Easy to install without special tools

Permanent Roof Anchor
Part No. 10016468

5K Removable Concrete Anchor
Part No. 10081594

10K Removable Concrete Anchor
Part No. 10081570

New!

Removable Concrete Anchors
- Quickly and easily removed and reinstalled in another location
- Compact and lightweight
- Durable stainless steel and aluminum construction
- 400 lb capacity
- 2 models: 5,000 lb version (5K) and 10,000 lb version (10K)

Part No.	Description
505233	1/4" wire rope, vinyl coated, fixed length, 5', RL20 snaphook one end, 3" O-ring on other end
506632	D-plate anchorage connector, zinc-plated steel
10003213	Bolt D-ring with hole only
506682	BeamGrip for beams with flange width: 3.94" to 5.64" flange thickness: .205" to .659"
415171	flange width: 5.525" to 8.07" flange thickness: .36" to 1.09"
415173	flange width: 10.265" to 12.8" flange thickness: .605" to 1.25"
10003210	Adjustable beam grip
10016468	Permanent roof anchor - 2"x 4"
10051455	FP Stryder Anchorage Connector, Standard version, fits beam flange widths from 4" - 14"
10051456	FP Stryder XL Anchorage Connector, XL version, fits beam flange widths from 14" - 24"
10051457	FP Stryder Anchorage Connector Kit, containing one complete Standard version FP Stryder, one XL adjustment bar, one carrying case, and one adjuster button replacement kit
10081594	5K Removable Concrete Anchor
10081570	10K Removable Concrete Anchor

Carabiners

MSA offers a wide variety of carabiners for almost every application. All carabiners have a minimum breaking strength of 5,000 lbs.

Part No. 506259
- 7/8" (22mm) gate opening
- Autolocking
- Aluminum

Part No. 506572
- 7/8" (22mm) gate opening
- Autolocking
- Steel

Part No. 506308
- 2" (50mm) gate opening
- Autolocking
- Steel

Part No. SRCC642
- 1.2" (32mm) gate opening
- Autolocking
- Steel
- NFPA Approved

Part No. SRCC643
- 1"(25mm) gate opening
- Autolocking
- Steel

Part No. SRCC734G
- 2.1" (52mm) gate opening
- Autolocking
- Steel

Locking and Unlocking Carabiners
ALWAYS CHECK THAT GATE IS SECURELY LOCKED BEFORE USE.
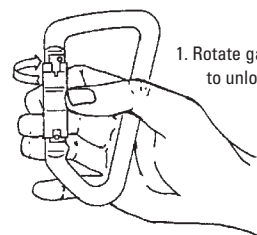
1. Rotate gate 90^0 to unlock
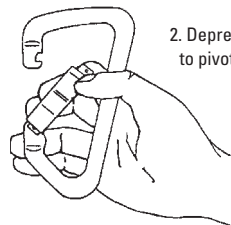
2. Depress gate to pivot open
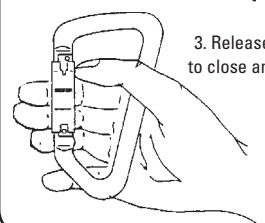
3. Release gate to close and lock

Part No.	Description
506259	Carabiner, 7/8" (22 mm) gate, twist lock, aluminum
50657	Carabiner, 7/8" (22 mm) gate, twist lock, steel
506308	Carabiner, 2" (50 mm) gate, twist lock, steel, with captive eye
SRCC643	Carabiner, 1" (25 mm) gate (large), autolocking, steel, with captive eye
SRCC734G	Carabiner, 2.1" (52 mm) gate (extra large), autolocking, steel, with captive eye
SRCC642	Carabiner, large D design, 1.2" (32 mm) gate, auto-locking, steel

Fall Protection Kits

Thermatek™ Kit

Includes:
- Thermatek Harness, standard size, made of a Kevlar/Nomex blend webbing that is resistant to chemicals, weld splatter, and other high heat exposures.
- Thermatek Shock-Absorbing Lanyard features a burn-resistant Tuffweld protective cover that is superior to Nomex. The Thermatek 12 lanyard model is designed to arrest a freefall up to 12' and keep fall arrest forces below OSHA limits.
- Thermatek Anchorage Connector Strap with Kevlar webbing and stitching has a replaceable wear pad to protect webbing from abrasion.
- Carrying Bag for convenience.

Thermatek Kit in use

Part No.	Description
10026061	Thermatek Kit with Thermatek 6 lanyard (HL2000 Snaphooks)

Fall Protection

Anthron Descent Device System

The Anthron Descent Controller is a manually operated descent device. It is most commonly used for suspended work positioning, self evacuation, or rescue operations. Other features include:
- Proper roping/rigging diagrams on the side of the Anthron Descender
- Device can be installed/removed at any point on rope
- Working load of 300 lbs (136 kg)
- System consists of a 7/16" (11mm) rope, Anthron Descender, and two carabiners

Part No.	Description
SDC726050	Anthron system includes: Anthron descender, 2 carabiners, 50 ft rope
SDC726100	Anthron system includes: Anthron descender, 2 carabiners, 100 ft rope
SDC726150	Anthron system includes: Anthron descender, 2 carabiners, 150 ft rope

Anthron systems and replacement ropes available in lengths of 25-ft increments from 50 ft up to 600 ft

Anthron Descender

Anthron System in use
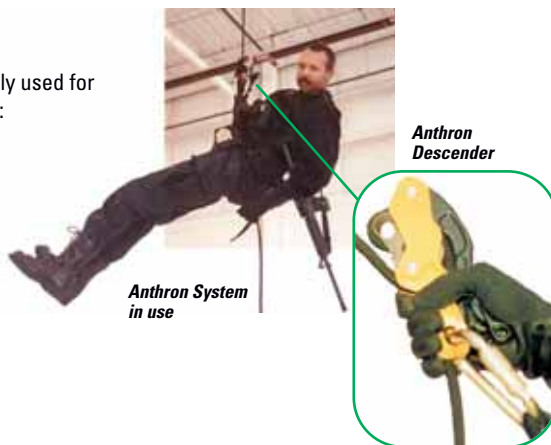
Roofers' Kits

Includes:
- Vest-Style Harness -- a lightweight, durable, abrasion-resistant harness.
- Lifeline with Locking Carabiner or Snaphook permits safety and ease of mind while working.
- Rope Grab is a lightweight and affordable fall arrest device.
- Roof Anchors & Woodscrews (on some kits) are disposable Roof Anchors constructed from heavy-gauge steel with a galvanized finish. Each comes with 8 galvanized flathead woodscrews.

All FP Pro products are fully compliant with applicable OSHA regulations and ANSI A10.14.

Part No.	Description
416067	FP Pro Roofers' Kit including: FP Pro Vest-Style Harness, Lifeline with Locking Carabiner, Rope Grab fall arrester, roof anchors & woodscrews, and Tote Bag
10049751	Roofer's Kit including: FP Pro Vestype Harness, Shock-Absorber with LS Snaphook attached to 25' polysteel 5/8" rope, Rope Grab fall arrester (p/n 10054077), one disposable roof anchor, all packaged in a handy 6 gallon bucket.
10054971	Roofer's Kit including: FP Pro Vest-Style Harness, 50' Lifeline with Locking Carabiner, Rope Grab fall arrester (p/n 10054077), roof anchors & woodscrews, and Tote Bag
SVL1013050	Roofer's kit including: Gravity harness (p/n SSH304200), Shock-Absorber with LS Snaphook attached to 50' polyester 5/8" rope, Rope Grab fall arrester (p/n SVLR537R018LS), all packaged in a handy 6 gallon bucket.
10063412	Roofer's Kit, 50' lifeline with shock-absorber, FP Pro Harness, Rope Grab fall arrester (SVLR537R018LS), roof anchor and Storage Bag
10057104	Roofer's Kit, 50' lifeline, FP Pro Harness, Roof Anchor, 6-Gallon Bucket

FP Pro Roofers' Kit
Part No. 416067

Roofer's Kit
Part No. 10049751

FP Pro Harnesses/Diamond™ Lanyard Kits

Two great products in one easy to order kit! These kits are available with your choice of a Cross-Chest or Vest-Style FP Pro Harness with or without hip D-rings, and with a single or twin-leg FP Diamond Shock-Absorbing Lanyard. All kits include carrying bag.

Part No.	Description
10062329	FP Pro Cross-Chest Harness, STD size, Qwik-fit leg straps, back D-ring, Diamond Lanyard
10062316	FP Pro Vest-Style Harness, STD size, Qwik-fit leg straps, back D-ring, Diamond Lanyard
10062411	FP Pro Cross-Chest Harness, STD size, Tongue Buckle leg straps, back D-ring, Diamond Lanyard
10062405	FP Pro Vest-Style Harness, STD size, Qwik-fit chest strap and Tongue Buckle leg straps, back D-ring, Diamond Lanyard

Additional sizes available. Contact MSA Customer Service Center for details.

FP Pro Harness/Diamond Lanyard Kit
Part No. 10062316

Rope Grabs and Vertical Lifelines

FP Pro Rope Grab

Unique, versatile, lightweight and affordable, the FP Pro Rope Grab features:
- Hands-free operation while ascending or descending
- Ultra-smooth travel action
- Cam and hinge design allows for a quick, easy installation on the rope
- Available with either polyester or polyester/polypropylene blend rope

FP Pro Rope Grab with 3'
Dyna-Brake Lanyard
Part No. 415940

Rope Grab Fall Arrester
Part No. 10054077

Rope Grab Kit
Part No. 415942

Part No.	Description
415940	FP Pro Rope Grab with 3' Dyna-Brake Lanyard
415942	Rope Grab kit with 50' -5/8" rope, polyester, anchorage connector strap
10054077	Rope Grab fall arrester
415869	50 ft - 5/8" rope, polyester with RL20 snaphook on one end
415871	100 ft - 5/8" rope, polyester with RL20 snaphook on one end
415873	200 ft - 5/8" rope, polyester with RL20 snaphook on one end

Sure-Grab™ Rope Grab

The SVLR78 Sure-Grab device and lifeline is used to provide temporary fall protection on ladders or when climbing vertical structures. This system can also be used to provide a secondary lifeline for suspended positioning systems used by building/structure inspectors, window cleaners, and maintenance personnel. The Sure-Grab device moves freely up or down an approved 5/8" (16 mm) diameter lifeline. When sudden downward movement occurs, a camming lever is activated arresting the fall. The device can be installed or removed from the lifeline at any point along its length.

Sure-Grab rope grabs are CSA certified.

Part No.	Description
SVLR78LS	Rope grab fall arrester, automatic/manual, open body, c/w 1-3/4" x 12" web lanyard, LS snaphook
10030433	CSA rope grab kit #1. Includes: Sure-Grab (SVLR78LS) and 60' Vertical Lifeline (SLLPB672-060/LS)
SRIW1000	5/8" Termination Plate
SLLNL672060LS	Lifeline, nylon, white 3-strand, 5/8" x 60-ft (16mm x 20m) with LS snap on one end
SLLNL672100LS	Lifeline, nylon, white 3-strand, 5/8" x 100-ft (16mm x 30.5m) with LS snap on one end
SLLNL672200LS	Lifeline, nylon, white 3-strand, 5/8" x 200-ft (16mm x 61m) with LS snap on one end

Carabiner
Part No. SRCC643

Termination Plate
Part No. SRIW1000

Sure-Grab Fall Arrester
Lanyard
Part No. SVLR78LS

Sure-Stop Vertical
Lifeline

Fall Protection

Self-Retracting Lanyards

Aptura® SRL

MSA has set a new standard in the mechanical fall protection market with the Aptura LT12 and Aptura LT30 Self-Retracting Lanyard (SRL). Never before has the market seen such a state-of-the-art device with so many standard features. With its solid design and fast-acting brake mechanism, you can be confident that the Aptura LT12 and the Aptura LT30 SRL will be there for you when you need it most. All Aptura SRL's feature:

- A durable, engineered thermoplastic housing to increase service life.
- Rugged, impact-absorbing protective bumpers for added durability.
- A field-replaceable lifeline option. In the event that the webbing should become damaged, this option provides a field-replaceable web lifeline, eliminating costly returns to the manufacturer. The Aptura is the first SRL to offer this feature.
- A 400-pound working capacity as a standard feature.
- No annual factory recertification required due to high-quality construction. This not only reduces the cost of ownership, but also eliminates down time.
- An integral load indicator lets you know when it is time to remove the product from service.
- SRL connector with integral swivel.
- Meets ANSI Z359.1-1992 (R1999), ANSI A10.32 and all applicable OSHA standards, and is CSA certified.
- ATO ordering flexibility allows you to order the exact options, and only the options you want.

All these features and more combine to deliver the most versatile SRL available on the market today, the APTURA self-retracting lanyard.

Restrictions from local governing authorities still apply. Consult with your Safety Director regarding applicable restrictions, regulations, and standards in your area.

Aptura® LT12 SRL

In addition to the exciting features of all Aptura SRL's, the Aptura LT12 SRL features:
- A lightweight design starting at 2.4 pounds
- A standard lifeline length of 12'. Available in lengths from 6' to 12'
- A constant lock-up rate to prevent the erratic, "jerky" lock-up (like a seat belt) found on some types of personal fall limiters.

Aptura® LT30 SRL

In addition to the exciting features of all Aptura SRL's, the Aptura LT30 SRL features:
- A lightweight design starting at 7.5 pounds
- A standard lifeline length of 30'. Available in lengths from 13' to 30' in 1 foot increments

SRL Connection Options

Back D Connector
Part No. SRCC413

1" Steel Carabiner
Part No. SRCC643

Lifeline Connection Options

HL2000
Snap

LS Snap

LI Snap

APTURA LT30
Part No. 10053558

APTURA LT12
Part No. 10042171

Part No.	Line Length	SRL Connection	Lifeline Connection	Field Replacement Line
10042171*	12 ft	None	LI Snap	Yes
10044228*	12 ft	Back D Connector	HL2000	Yes
10044229*	12 ft	None	HL2000	Yes
10044320*	12 ft	1" Steel Carabiner	HL2000	Yes
10050504	30 ft	None	LI Snap	Yes
10053558	30 ft	None	HL2000	Yes
10053559	30 ft	1" Steel Carabiner	LS Snap	Yes
10053560	30 ft	1" Steel Carabiner	HL2000	Yes

* Not CSA Certified

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Dyna-Lock® SRL's

Dyna-Lock SRL
Part No. 506204

The MSA Dyna-Lock Self-Retracting Lanyards (SRL) are fast-acting fall arresters that limit free-fall distance, deceleration distance, and fall arrest forces while allowing user freedom of movement. The Dyna-Lock SRL is ideal for climbing applications where vertical mobility is needed.

The Dyna-Lock SRL has a 4.5-feet-per-second locking speed. A built-in shock absorber limits fall arrest forces to under 900 lbf. Three continuously moving independent braking mechanisms prevent freezing in icy or corrosive conditions. Available with 3/16-inch galvanized or stainless steel wire rope, or 1-inch wide nylon webbing. A forged steel, zinc-plated, self-locking swivel snaphook is present on each unit with a load indicator that activates and alerts the user when the Dyna-Lock SRL has been impact loaded. The Roughneck model incorporates a black corrosion-resistant coating designed for severe environmental conditions. Meets ANSI Z359.1-1992 (R1999), ANSI A10.32, and applicable OSHA standards. Models with CSA part numbers are CSA certified.

NOTE: This "no re-certification" policy does not mean that routine inspections do not need to be performed on MSA mechanical units. All users of MSA mechanical products are still required to perform a pre-use inspection and a formal inspection of each mechanical unit in accordance with the user instructions, and as outlined in OSHA regulations, ANSI standards, and CSA standards. CSA standards require an annual re-certification for mechanical products two years from date of manufacture.

Backpacker SRL
Part No. 506619

Capacity (working load)
For 20' web, 30', 50', 70', and 95' cable Dyna-Lock Models:
- Maximum: 400 lbs (181 kg)
- Minimum: 75 lbs (34 kg)

Now rated to a capacity of 400 lbs

For 20' cable Dyna-Lock, Short-Stop, and Sure-Lock Models:
- Maximum: 310 lbs (140 kg)
- Minimum: 75 lbs (34 kg)

Arrest Force
- 75 - 310 lbs < 900 lbf (4 kN)
- 311 - 400 lbs < 1800 lbf (8 kN)

Arrest Distance
- 75 - 310 lbs < 40 in (101.6 cm)
- 311 - 400 lbs < 54 in (137 cm)

20' Strap
Dyna-Lock SRL
Part No. 506615

No factory re-certification required!

20' Wire Rope
Dyna-Lock SRL in use

Part No.	CSA Part No.	Description
506202	10006470	Dyna-Lock SRL, galvanized wire rope, HL2000S, 10M (30')
506204	10006468	16M (50')
506208	10006464	30M (95')
506615	10006447	20' web Dyna-Lock, nylon, HL2000S
10017931*	10017933*	20' Wire Rope Dyna-Lock, stainless steel, HL2000S
506619	10006446	Backpacker 20' web Dyna-Lock, nylon, RL20S

* 310 lbs maximum capacity

20' Wire Rope
Dyna-Lock SRL
Part No. 10017931
(310 lbs Maximum Capacity)

Fall Protection

Confined Space Equipment

MSA confined space entry/retrieval systems are designed for fall arrest, lifting and lowering, rescue, and work positioning applications. They incorporate an anchorage connector, fall arrest component (Dyna-Lock, Dynevac II, Lynx Rescuer), a personnel and materials handling hoist (Lynx Hoist), and associated hardware to rig the system for use. The systems can be used for leading edge work, maintenance and entry/retrieval from manholes, tank cars, silos, tanks, vaults, pits, vats, and other confined space applications.

Lynx® Rescuer, Field Resettable Model with Lockout
- Self-Retracting Lanyard with emergency retrieval capabilities
- User is able to reset device from retrieval mode to fall arrest mode
- The easiest, quickest field-reset mechanism on the market
- Same unit can be used in the field and for training situations
- Lock feature with key allows more control over who can reset unit to fall arrest mode
- Confined space entry provides fall arrest and emergency lifting and lowering
- Meets ANSI Z359.1-1992 (R1999), and all applicable OSHA standards, and is CSA certified

Lynx Rescuer
Part No. 10011744

Part No.	CSA Part No.	Description
10011744	10023016	50-ft (16m) Self-Retracting Lanyard with Emergency Rescuer, 3/16" diameter stainless steel line. With proper inspection, system may be reused after fall arrest and/or retrieval.
10011745	10023017	95-ft (30m) Self-Retracting Lanyard with Emergency Rescuer, 3/16" diameter stainless steel line. With proper inspection, system may be reused after fall arrest and/or retrieval.

Lynx® Personnel/Material Hoist
- Designed for lifting, lowering, and positioning of personnel and materials
- Maximum work load of 310 lbs for personnel and 620 lbs for materials
- Anti-backlash crank handle with a lifting/lowering speed of 25-ft per minute
- Integral shock absorber
- Load-limiting clutch prevents overloading of hoist
- Emergency drive allows manual bypass of load-limiting clutch for extra lifting capacity in an emergency
- Primary gear backed up by two independent secondary brakes
- Air drive adapter enables powered lifting/lowering with optional air-powered drive assembly
- Meets ANSI Z359.1-1992 (R1999), and all applicable OSHA standards

Lynx Hoist
Part No. 10016569

Part No.	Description
10016569	Side mount with emergency drive and air drive adapter, galvanized wire rope, 50'
10016568	Side mount with emergency drive and air drive adapter, galvanized wire rope, 105'
10016683	Boom mount with emergency drive and air drive adapter, galvanized wire rope, 50'
10016682	Boom mount with emergency drive and air drive adapter, galvanized wire rope, 105'

Lynx Boom Mount Hoist
Part No. 10016683

Lynx® Tripod

- Automatic hinge lock legs
- Constructed of three anodized aluminum legs and a zinc-plated carbon steel head
- Legs feature 1-1/4 in. incremental adjustment with positive locking pins
- Skid resistant feet with self-sharpening spikes

8' Lynx Tripod
Part No.
10022050

Part No.	Description
10022050	8' Lynx Tripod
10022051	10' Lynx Tripod

Confined Space Entry Kits

Confined Space Entry Kits make it easy for you to order the Confined Space System which best suits your needs.

The Confined Space Entry Kits feature:
- 3 Tripod Kits and 2 Folding Davit Kits
- Single part number for simplified ordering
- Confined Space Kits with Lynx Rescuer allow for non-entry rescue of a confined space entrant
- Tripod and Davit Kits allow for great portability
- Training Video and Tripod Carrying Strap included within each kit

Lynx® Tripod Confined Space Entry Kit #1
(P/N 10023966)
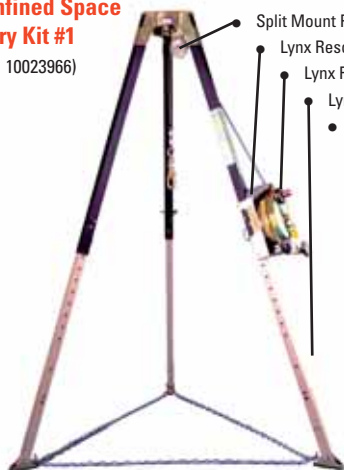
- Split Mount Pulley (P/N 506222)
- Lynx Rescuer Mounting Bracket for Tripod (P/N 506232)
- Lynx Rescuer 16 m (P/N 10011744)
- Lynx 8' Tripod (P/N 10022050)
- Includes Carry Bags for Tripod & Lynx Rescuer

Lynx® Tripod Confined Space Entry Kit #2
(P/N 10023967)

- Pulley/Bracket Assembly (P/N506473)
- Side Mount Lynx Hoist, with 50' galv. line (P/N 10016569)
- Lynx 8' Tripod (P/N 10022050)
- Includes Carry Bags for Tripod & Lynx Hoist

Lynx® Tripod Confined Space Entry Kit #3
(P/N 10023968)

- Pulley/Bracket Assembly (P/N506473)
- Side Mount Lynx Hoist, with 50' galv. line (P/N 10016569)
- Lynx 8' Tripod (P/N 10022050)
- Includes Carry Bags for Tripod, Lynx Rescuer, & Lynx Hoist

- Split Mount Pulley (P/N 506222)
- Lynx Rescuer Mounting Bracket for Tripod (P/N 506232)
- Lynx Rescuer 16 m (P/N 10011744)

Part No.	CSA Part No.	Description
10023966	10048472	Lynx Tripod Confined Space Entry Kit #1
10023967	—	Lynx Tripod Confined Space Entry Kit #2
10023968	10048473	Lynx Tripod Confined Space Entry Kit #3

Fall Protection

Folding Davit and Base

The Folding Davit and Base is a portable and economical anchorage connector used where a tripod will not work. Available with a zinc-plated alloy-steel Davit Arm and your choice of zinc-plated carbon steel or stainless steel Davit Base. This lightweight device provides a 24-inch reach and 77-inches of head clearance. It pivots 360-degrees and can readily maneuver personnel and materials between spaces below the deck where it is mounted. The Folding Davit may be carried from base to base and installed in minutes. Meets or exceeds ANSI Z359.1, ANSI A10.32, and applicable OSHA requirements. Mounting brackets and pulleys sold separately.

Column Davit and Base

The Column Davit and Base are used for more permanent conditions where a tripod will not work. Available with a zinc-plated alloy-steel Davit Arm and zinc-plated carbon steel or stainless steel bases. Provides a 30-inch reach and 77-inches of head clearance. May be mounted to horizontal, vertical, and subsurface appropriate anchor points. Pivots 360-degrees. Meets or exceeds applicable OSHA requirements. Mounting brackets and pulleys sold separately.

Folding Davit arm -
Part No. 506613
Folding Davit base -
Part no. 506614

Column Davit arm -
Part No. 506568
Column Davit base -
Part No. 506492

Part No.	Description
506613	Folding davit arm, 24" reach, 77" working height, swivels to extend over work area, folds for ease of transport and storage
506614	Folding davit base
506622	Bracket for mounting 10m (30 ft)/ 16m (50 ft) Dyna-Lock, Dynevac, and Lynx Rescuer to Folding davit
506362	Bracket (same as above), except for 22m (70 ft)/ 30m (95 ft) Dyna-Lock
506568	Column davit arm, 30" reach, 77" working height, boom arm swivels to extend over work area
506492	Surface mounting receptacle for Column davit arm
506232	Bracket for mounting 10m (30 ft)/ 16m (50 ft) Dyna-Lock, Dynevac, and Lynx Rescuer to Column davit, aluminum (requires part no. 506590)
506216	Bracket (same as above), except for 22m (70 ft)/ 30m (95 ft) Dyna-Lock
506590	Bracket for mounting Dyna-Lock or Dynevac to Column davit (requires part no. 506216 or 506232)
506603	Holster to store Boom Mount Hoist when not in use
506668	Vertical davit arm - Ladder Mount
506667	Receptacle for Vertical davit arm - Ladder Mount (bolts to ladder)
415837	Push-Pull davit - Ladder Mount, bolts to ladder and retracts to allow hatch cover to close, extends 60" above hatch when extended

Vertical Davit -
Ladder Mount

Mounting Bracket
506627 for 30'/50' units
506261 for 70'/95' units

Lynx Rescuer

Vertical Davit Arm -
Ladder Mount
(Part No. 506668)

Push-Pull Davit -
Ladder Mount

Vertical Davit
Arm Receptacle
(Part No. 506667)

Push-Pull Davit Arm
(Part No. 415837)

Existing Fixed
Ladder
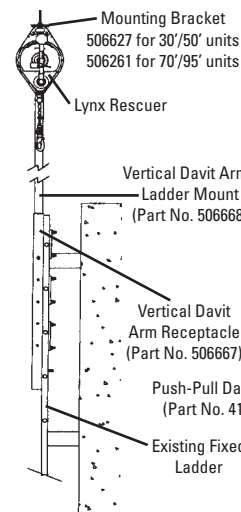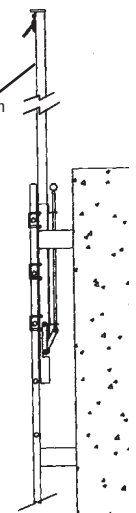
Bosun Chair

The Bosun Chair is the best method to sit suspended for long durations. The padded seat ensures your comfort during use. The adjustable web assembly ensures security. Designed to be used in conjunction with our Full Body Harnesses, the Bosun Chair, attached to the chest D-ring, will keep the user in the upright position.

Part No.	Description
SSH3505017	Bosun Chair, 5" x 16-1/2" padded seat, black nylon straps, 2 carabiners

Bosun Chair
Part No. SSH3505017

Sure-Climb System with Integral
Shock Absorber
Part No. SFPLS353050

Ladder Climbing Equipment

Sure-Climb™ Temporary Cable System

The Sure-Climb Temporary Ladder Cable System is designed to provide fall protection when climbing or descending ladders or vertical structures up to 300' in height. Applications include telecommunications towers, light poles, water towers, hydroelectric towers, stacks, and any other climbable structure. The Sure-Climb temporary system:

• Is available in 2 versions; with an integral shock absorber,
  or with an energy-absorbing top mounting bracket
• Allows for quick and easy attachment to approved ladder or structure
• Includes an integral, adjustable line weight
• Uses a stainless steel fall arrester (ordered separately)
• Uses a 5/16" galvanized steel cable
• Meets all applicable OSHA regulations and ANSI standards
• CSA certified

All Sure-Climb systems include: anchor bracket, anchor shackle, cable guides, wire rope clips, turnbuckle, and cable.

Fall Arrester must be ordered separately.

Part No.	Description
SFPLS353050	Sure-Climb System with integral shock absorber, 50 ft (16 m)
SFPLS353100	Sure-Climb System with integral shock absorber, 100 ft (30 m)
10040010	Sure-Climb Slider (fall arrester) with carabiner

Additional Lengths available from 50 ft. up to 200 ft. in fifty foot increments

Sure-Climb™ Permanent Cable System

The Sure-Climb Permanent Ladder Cable System is designed to provide fall protection when climbing or descending ladders or vertical structures up to 300' in height. Applications include telecommunications towers, light poles, water towers, hydroelectric towers, stacks, and any other climbable structure. The Sure-Climb permanent system:

• Includes energy-absorbing, galvanized steel top and bottom mounting brackets
• Uses a 5/16" galvanized steel cable
• Incorporates cable guides to minimize cable vibration and wear
• Uses a stainless steel fall arrester (ordered separately)
• Meets all applicable OSHA regulations and ANSI standards
• CSA certified

Sure-Climb Slider
Part No. 10040010

Part No.	Description
SFPLS350050	Sure-Climb System 50 ft (16 m)
SFPLS350100	Sure-Climb System 100 ft (30 m)
10040010	Sure-Climb Slider (fall arrester) with carabiner

Additional Lengths available from 20 ft. up to 300 ft. in 10 ft. increments

Sure-Climb Slider can be attached and removed anywhere along the length of cable

Step 1

Step 2

Step 3
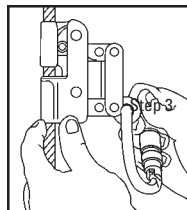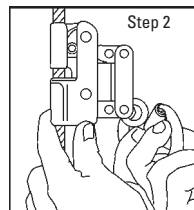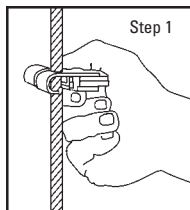
Fall Protection

Dyna-Glide® Climbing Protection System

The Dyna-Glide Climbing Protection Systems are used to prevent and/or arrest falls from heights and also enhance the way a climber is able to perform the necessary work. Our systems can be mounted to already-installed ladders, to corners of lattice towers, and to almost any other suitably strong structure your crew needs to climb.

Whatever configuration works for you, the Dyna-Glide System:
- Limits total fall distance to inches
- Offers components for complete rescue systems
- Allows for vertical and horizontal mobility
- Uses galvanized or stainless steel for corrosion resistance
- Offers your choice of Ladder Rail Combination (LRC) or Rail only
- Provides smooth travel – there's no binding of the fall arrester inside the rail
- Uses detachable, lightweight, stainless steel and aluminum mechanism for hands-free ascent and descent
- Is CSA certified

Taken together, the Dyna-Glide System is designed to be installed without modification to the structure and can be assembled with simple hand tools.

Dyna-Glide LRC in use.

LRC Combination
Part No. 506390
- Rungs incorporate skid resistant surface
- Can be curved or bent for your specific application
- Constructed of galvanized steel
- Standard length: 7' 4-3/16"
- Standard width: 18"

Fall Arrester
Part No. 506277
- Mechanical locking mechanism to reduce fall distance
- Permits hands-free ascent and descent
- Constructed of aluminum and stainless steel
- Carabiner not included

Part No.	CSA Part No.	Description
506270	—	Straight Notched Rail, galvanized, standard length 7' 4-3/16"
506273	—	Rung Mount Assembly, galvanized
506274	—	Gated top end stop, stainless steel
506275	—	Gated bottom end stop, stainless steel
506277	415752	Fall arrester
506282	—	Mounting base angle corner, galvanized
506283	—	Mounting angle corner, galvanized
506312	—	Ungated top end stop, stainless steel
506329	—	Rail connector, galvanized
506388	—	Ladder/Rail Combination (LRC) standoff bracket, galvanized, standard length 7' 4-3/16"
506389	—	LRC standoff bracket, bottom, galvanized
506390	10006461	LRC, galvanized
506391	—	LRC side rail connector, galvanized

For more complete information on the Dyna-Glide System, see the Dyna-Glide Catalog (Bulletin 2300-22-MC).

Temporary Horizontal Lifelines

Temporary Synthetic Horizontal Lifelines

Designed for easy installation and removal, these temporary horizontal lifeline systems were created for a wide range of applications. The system may be mounted to any suitable 5,000 lb-rated anchorage. Both systems can be rigged using many standard components, reducing the need for special or "engineered" equipment.

Dyna-Line® HLL

- Highly visible 12-strand red rope will not hackle and minimizes fall distance due to its low stretch properties.
- Available in a Single-Worker or Two-Worker system.
- Available in lengths up to 200 ft. System comes in a handy bucket for lengths up to 60 ft.
- Meets all OSHA requirements and ANSI A10.32 standards.

Sure-Line™ HLL

- Includes integral energy absorber
- 5/8" black nylon kernmantle rope
- Available in lengths up to 60 ft
- Rated for two workers
- Includes 2 cable anchor slings
- Includes storage bag

Dyna-Line Temporary Horizontal Lifeline
for Two Workers Part No. 10013152

Part No.	Description
10013150	Dyna-Line Temporary Horizontal Lifeline for single worker, 30 ft rope
10013151	Dyna-Line Temporary Horizontal Lifeline for single worker, 60 ft rope
10013152	Dyna-Line Temporary Horizontal Lifeline for two workers, 30 ft rope*
10013153	Dyna-Line Temporary Horizontal Lifeline for two workers, 60 ft rope*
SHL1009035BLK	Sure-Line Temporary Horizontal Lifeline, 35 ft black rope
SHL1009060BLK	Sure-Line Temporary Horizontal Lifeline, 60 ft black rope

* Dyna-Line Two-Worker system includes 2 polyester anchorage straps.

Dyna-Line Rope HLL Minimum Clearance

Line Length	1-Worker System		2-Worker System	
	6' Lanyard	SRL	6' Lanyard	SRL
10 ft	14'10"	12'5"	15'10"	13'2"
20 ft	15'9"	13'8"	17'2"	14'9"
30 ft	16'10"	15'1"	19'4"	16'6"
40 ft	18'0"	16'4"	21'4"	18'3"
50 ft	19'3"	17'6"	23'2"	20'1"
60 ft	20'6"	18'9"	25'1"	22'

Clearances based on Lifeline 4' above working surface

Sure-Line Rope HLL Minimum Clearance

Line Length	1-Worker System		2-Worker System	
	6' Lanyard	SRL	6' Lanyard	SRL
10 ft	14'3"	12'5"	14'7"	13'2"
20 ft	15'6"	13'9"	17'	15'
30 ft	17'1"	15'2"	19'4"	16'7"
40 ft	18'6"	16'5"	21'8"	18'4"
50 ft	20'	17'8"	24'2"	20'3"
60 ft	21'5"	19'1"	26'	22'2"

Clearances based on Lifeline 4' above working surface

Sure-Line Temporary Horizontal Lifeline for Two Workers
Part No. SHL1009060BLK

Temporary Cable Horizontal Lifeline

Sure-Line™ Temporary Horizontal Lifelines

The Sure-Line temporary Horizontal Lifeline is a lightweight cable system that is suspended between two approved anchor points to provide worker fall protection during horizontal movement. Designed for quick and easy installation at temporary work sites, the Sure-Line system:

- Includes an integral shock absorber
- Available in 20-ft, 40-ft, or 60-ft lengths
- Uses a 3/8", 6x36 galvanized cable
- Available in 2 models, with or without turnbuckle
- Rated for up to 2 people
- Incorporates a combination clamp/thimble that allows for effortless tensioning of lifeline

Part No.	Description
SHL2009040	Steel Cable Horizontal Lifeline System with turnbuckle, 40 ft (12 m)
SHL2009060	Steel Cable Horizontal Lifeline System with turnbuckle, 60 ft (18 m)
SHL2009040IW	Iron Worker Cable Horizontal Lifeline System without turnbuckle, 40 ft (12 m)
SHL2009060IW	Iron Worker Cable Horizontal Lifeline System without turnbuckle, 60 ft (18 m)

Sure-Line Rope HLL Minimum Clearance

Line Length	1-Worker System		2-Worker System	
	6' Lanyard	SRL	6' Lanyard	SRL
10 ft	14'1"	12'2"	14'6"	13'2"
20 ft	15'1"	13'1"	16'7"	14'8"
30 ft	16'2"	14'	19'	16'4"
40 ft	17'3"	14'9"	21'	18'
50 ft	18'4"	15'7"	22'7"	19'6"
60 ft	19'5"	16'5"	24'3"	21'4"

Clearances based on Lifeline 4' above working surface

Sure-Line Steel Cable System
Part No. SHL2009040

Sure-Line Iron Worker Cable System
Part No. SHL2009040IW

Fall Protection

Permanent Horizontal Lifelines

SkyLink™ HLL STANCHION

- Economical
- Accommodates two workers per system
- Lightweight - weighs only 21 pounds, making it easily installed, removed, and handled by 1 person
- Only a 24-hour cure time required for pour-in-place Pigtail anchor (min. 3,000 psi concrete), so you won't hold up a job or slow down your crew.
- No tools required for installation when using pour-in-place anchor, making it easy to install - sets up in minutes!
- Can be used as single point anchor attachment, providing fall protection for workers while installing horizontal lifelines
- Offers two installation methods to concrete, a pour-in-place anchor for new construction or concrete expansion bolts for existing construction, providing versatility to meet the requirements of your application
- Aluminum and steel construction increases durability to ensure long service life
- Folding leg stanchion design makes the stanchion easy to carry and convenient to store
- No tie-back line required reduces trip hazards
- Meets ANSI A10.32 and OSHA requirements

Standard Model
Part No. 10055659

SL Model
Part No. 10055660

Designed to support horizontal lifelines in two directions (in-line with D-ring head)

Can be used as single point anchor while connecting lifeline

Two possible methods of securing stanchion feet to concrete

Can be attached to concrete using concrete expansion bolts

Can be attached to concrete using integral Speed Nut and Pig-tail anchor

Part No.	Description
10055659	Skylink Stanchion, Standard model - 44" height (pour-in-place Pigtail or concrete expansion anchors must be ordered separately)
10055660	Skylink Stanchion, SL model - 23" height (pour-in-place Pigtail or concrete expansion anchors must be ordered separately)
10055721	3.25" concrete expansion anchor with nut and washer
10059805	0.5" x 12" pour in place "Pigtail" anchor with washer and vinyl cap
10059806	Skylink Stanchion Kit including 2 - Standard stanchions with 60' 2- worker Dyna-Line 10013151 (without anchor straps) and 4 Pigtail anchors
10059807	Skylink Stanchion Kit including 2 - Standard stanchions with 60' Sure-Line for Iron Workers (p/n SHL2009060IW), and 4 Pigtail anchors
10059808	Skylink Stanchion Kit including 2 - SL stanchions with 60' 2- worker Dyna-Line (p/n 10013153 - without anchor straps) and 4 Pigtail anchors
10059809	Skylink Stanchion Kit including 2 - SL stanchions with 60' Sure-Line for Iron Workers (p/n SHL2009060IW), and 4 Pigtail anchors

MSA **Customer Service Center: 1-800-MSA-2222 • Website: www.MSAnet.com • QuickLit Fax Information: 1-800-672-9010**

D6 HLL STANCHION

The D6 HLL Stanchion is an anchorage connector used for the installation of horizontal lifeline systems. Designed with a jaw clamp screw, D6 HLL Stanchions are easily installed on steel girders or base plates fitted to bridge rail ties to provide a strong stable connection point for the approved horizontal lifeline system. The D6 HLL Stanchions can be used as the end or intermediate connection points for either a single or multi-span horizontal lifeline system.

Anchorage Bracket Also Features:
- Engineered A-frame design
- Constructed of galvanized steel
- Jaw clamp screw allows for quick & easy installation
- Collapsible A-frame for easy transport & storage
- Meets all applicable OSHA regulations & ANSI standards

D6 HLL Stanchion
for Horizontal Lifeline
Part No. SHLARD6A

HLL quickly connects to Stanchion

Jaw clamp screw easily attaches to I-beam flange
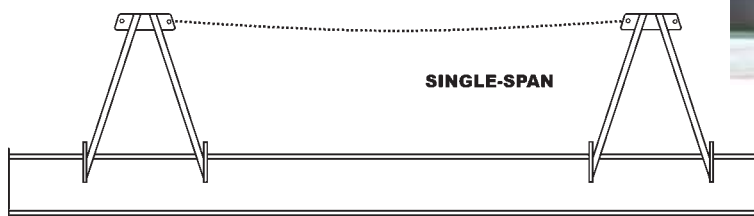
SINGLE-SPAN
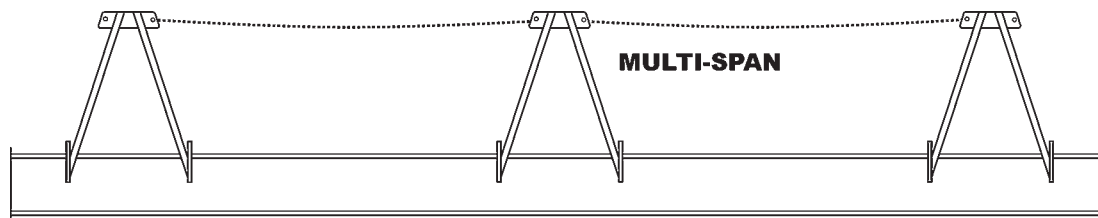
MULTI-SPAN

Part No.	Description
SHLARD6A	D6 HLL Stanchion A-frame design, galvanized steel

Fall Protection

Horizon® Horizontal Lifeline

The MSA Horizon Horizontal Lifeline anchorage connecting system is designed for portability, versatility, ease of installation, and ease of use. The system may be mounted to existing overhead steel beams or to newly constructed steel structure where overhead anchorage points are not available. Horizontal travel through intermediate supports is achieved without disconnection of the worker's personal fall arrest system. The system may accommodate up to five persons. The unique shock absorber reduces dynamic forces transmitted to the anchorage points. Stanchion system may be installed on the top or bottom flange of an I-beam. Typical applications include new construction (steel erection), inspection and maintenance operations, loading bays, bridges, overpasses, aircraft hangars, manufacturing, petrochemical, chemical, and food processing plants. Meets OSHA requirements.

Basic Below Beam Mount Sub-System

Parts required for this system: 3 Beamgrips (Part No. depends on size of beam flange); 1 - 415836; 1 - 506648 (30'); 1 - 506636; 1 - 506563; 1 - 506662; 2 - 506637

I-Beam

HLL Shock Absorber with Turnbuckle
P/N 415836

Lifeline
P/N 506648 -
3/8" Wire Rope
30' Length

Bypass
P/N 506636

Open Wedge Socket with Wire Rope Clip
P/N 506563

Turnbuckle with Plate
P/N 506662
Optional - recommended for lengths over 50'

End Fitting
P/N 506637

Beamgrip
Part No. depends on flange width and thickness, see part no. list below.
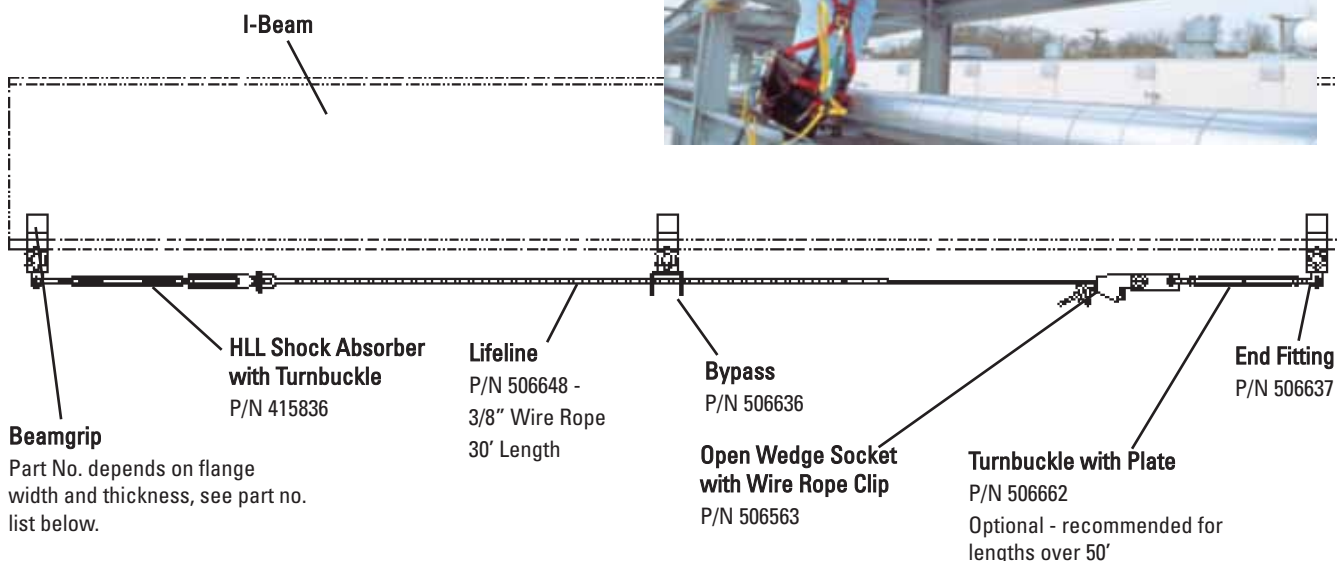
Part No.	Description
506682	Beamgrip for beams with flange width: 3.94" to 5.64", flange thickness: .205" to .659"
415171	Beamgrip for beams with flange width: 5.525" to 8.07", flange thickness: .36" to 1.09"
415172	Beamgrip for beams with flange width: 8.06" to 10.475", flange thickness: .56" to .935"
415173	Beamgrip for beams with flange width: 10.265" to 12.8", flange thickness: .605" to 1.25"
415836	Horizontal lifeline shock absorber
506563	3/8" open wedge socket
506636	Beamgrip bypass fitting
506637	Beamgrip end fitting
506648	3/8" wire rope, galvanized, length must be specified at the time of order
506662	12" turn buckle with plate
506663	Snatch block pulley for 3/8" wire rope
506254	for 1/2" wire rope
506255	for 5/8" wire rope

⚠ WARNING

OSHA regulations state "Horizontal Lifeline Systems shall be designed, installed and used under supervision of a qualified person, as part of a complete fall arrest system, which maintains a safety factor of at least two." A qualified person is defined as "one with a recognized degree or professional certificate and/or extensive knowledge and experience in the subject field, who is capable of design, analysis, evaluation and specifications in the subject work, project or product." MSA can provide a qualified person to design and install a Horizontal Lifeline System. Contact the MSA Engineering Service Department.

FP Rescue™ Pulleys & Components

Suretyman™ Pulleys

Designed to meet the rigorous standards of the professional rescuer. Built with high grade aluminum side plates and sheaves, oilite bearings, stainless steel bolts, washers, and lock nuts make these some of the best pulleys available. The aluminum side plates swivel and rotate to allow the pulley to be attached anywhere along the rope. The top holes of the side plates are large enough to accept three carabiners. Contain Prusik design (squared corners of the side plates) to provide rope security with a Prusik hitch. Pulleys accept 3/8" (1cm) to 1/2" (1.3 cm) static kernmantle ropes. Side plates are powder coated. Strength: 2" (5 cm) Double 8,100 lb (36 kN), 4" Double 11,200 lb (49 kN).

Part No.
SPPPU8708

Part No.
SPPPU8720

Suretyman™ Mini Knot Passing Pulley

The Suretyman Mini Knot Passing Pulley was designed for the professional rescue team concerned with size and weight. The Suretyman Mini Knot Passing Pulley features:

- Ample room for the passing of knots
- Size: 9-1/2" (24 cm) tall, 4" (10 cm) wide, 3" (7.6 cm) deep
- Aluminum sheave
  (that will not score like some of the plastic sheaves)
- Locking pin
- Weight: 1.9 lb (.89 kg)
- Half the size and weight of some of the larger, bulkier knot passing pulleys

Part No.
SPPRL4000

Suretyman™ Edge Roller

The best way to protect your rope from sharp edges and reduce rope friction. High quality construction. The 6" x 10" (15.3 cm x 24.4 cm) base is rubber covered to reduce slippage. The bottom and side plate feature attachment holes for ease of security in any situation. Added slots in the base plate accept tube webbing for security. Two edge rollers are required (sold separately). Two quick links are required (sold separately). Edge roller is 4" (10 cm) tall. Weight: 2.8 lb (1.3 kg).

Part No.
SMI420560

SuretyMan™ Q-Eight

- Ears/cleat are positioned to make tie off very easy and safe
- Ears/cleat still prevent larks footing (girth hitch)
- Designed for 7/16" (11 mm) diameter rope
  (will work with 1/2" (12 mm) diameter rope)
- Aluminum, anodized gold
- Strength 13,000 lbs (58 kN)
- Weight 8 oz (.24 kg)

SuretyMan™ Rescue Eight

- Designed for rope diameters from 7/16" (11 mm) to 5/8" (16 mm)
- Strength 6,720 lb (30 kN)
- Designed for the fire service, rescue, and police tactical operations
- Available in aluminum or steel
- Weight 1.5 lb (675 g)

Suretyman Q-Eight
Part No.
SRSFFE2120

Suretyman Rescue
Eight, Steel
Part No. SRSF5045

Suretyman™ Rigging Plates

Stealth Riggin Plate: Anchor on the point and the wings will rotate toward the load for a straighter line of pull. Material aluminum. Weight: .46 lb (250g). Strength: 11,000 lb (48 kN). Color: Teal

Stretcher Rigging Plate: Designed to unclutter and organize litter rigging points, reducing the chance of error. Material aluminum. Weight: .74 lb (330g). Strength: 12,200 lb (54 kN). Color: Teal

Rescue Carabiner

- Traditional large "D" design
- Developed for fire and rescue communities
- Manual locking
- Certified to meet NFPA 1993-1995, Class "G"
- Carbon steel, zinc-plated
- Strength 12,364 lbs (55 kN)
- Weight 11 oz (311g)
- Gate opening 1.2" (32mm)

Stealth Rigging Plate
Part No. SRSPR5990

Stretcher Rigging Plate
Part No. SRSPR5980

Rescue Carabiner
Part No. SRCC641

Part No.	Description
SPPPU8708	Suretyman Pulley, 2" (5 cm) double, Std/Prusik, orange, aluminum, weight: .83 lb (375 g)
SPPPU8717	Suretyman Pulley, 4" (10 cm) double, Std/Prusik, orange, aluminum, weight: 1.8 lb (840 g)
SPPPU8720	Suretyman Mini Knot Passing Pulley, yellow, weight: 1.9 lb (.89 kg)
SPPRL4000	Suretyman Edge Roller, aluminum, weight: 2.8 lb (1.3 kg) - [two required]
SMI420560	Quick Link 5/16" (8 mm) for use with Suretyman Edge Roller - [two required]
SRSF5077	Suretyman Rescue Eight, aluminum
SRSFFE2120	Suretyman Q-Eight
SRSPR5990	Suretyman Stealth Rigging Plate, aluminum, teal
SRSPR5980	Suretyman Stretcher Rigging Plate, aluminum, teal
SRCC641	Carabiner, 1.2" (32mm) gate, steel

Fall Protection

FP Rescue Ropes

Static Kernmantle Ropes

These ropes are 100% permanent solution dyed color with contrasting marker stripe. Superior flexibility and knotability, provided by a unique double-twist cable core construction, gives superior resistance to abrasion that is up to four times greater than other static kernmantle ropes. These ropes are designed with load absorbing capabilities to provide additional safety in the event a dynamic force is applied.

Part No.	Description
SRP508760	7/16" (11 mm), nylon, 6,500 lb (2,948 kg), black
SRP504860SL	1/2" (12 mm), nylon, 9,100 lb (4,128 kg), white/orange tracer
SRP508960	5/8" (16 mm), nylon, 11,400 lb (5,171 kg), black

All ropes are ordered by the foot.

1. Tying a Two-Wrap Prusik Hitch

2.

3.

Tying a Three-Wrap Prusik Hitch
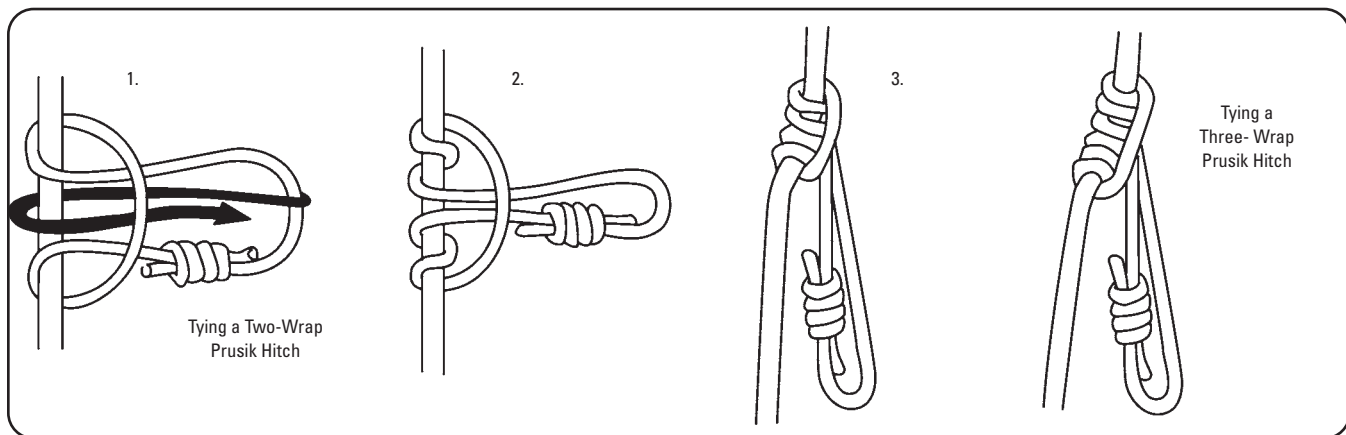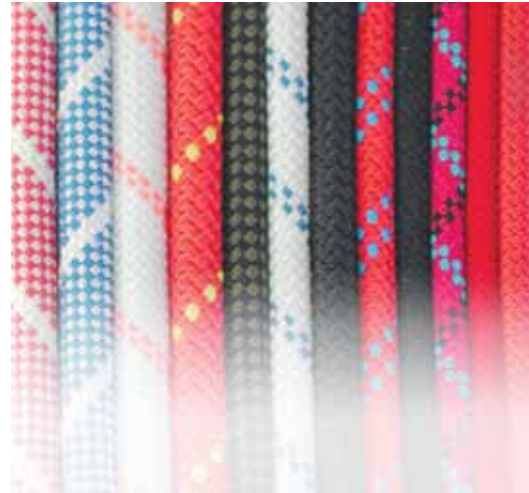
Prusik & Accessory Cords

Prusik cords have the same high quality and long wear design as rescue ropes. Size selection should be based upon diameter of the main line. The flexible cord is both strong and highly resistant to abrasion. Prusik cords and accessory cords are identical.

Part No.	Description
SRP500860	8 mm Accessory Cord, nylon. Use with 1/2"-5/8" (1.3cm-1.6cm) main line, black, 3,100 lb (1,406 kg)
SRP500900	9 mm Accessory Cord, nylon. Use with 1/2"-5/8" (1.3cm-1.6cm) main line, 3,600 lb (1,632 kg)

Rope Storage Bags

Rope Storage Bags are made of tough Cordura nylon fabric. Features include a drawstring top, handle/shoulder strap, and carabiner loops at top and bottom. In the bottom of the bag there is an inside loop for the end of the rope, or it can pass through the bottom grommet. Available in orange and black colors.

Part No.	Description
SRB430101	Rope Bag #1, orange, holds 120-ft / 1/2" (36.6m / 12 mm) rope
SRB430105	Rope Bag #1, black, holds 120-ft / 1/2" (36.6m / 12 mm) rope
SRB430201	Rope Bag #2, orange, holds 200-ft / 1/2" (60.1m / 12 mm) rope

Rope Bag #1
Part No. SRB430105

Rope Bag #2
Part No. SRB430201

FP Rescue TRIPOD

Sure-Strong™ Tripods

Sure-Strong Tripods feature:

- Adjustable aluminum legs
- Two forged steel anchor eyes in head assembly
- Head assembly prevents unintentional collapse of tripod
- Legs adjust and lock individually to accommodate variable anchor heights, uneven ground, and compact storage
- Leg security strap prevents legs from spreading in the event of excessive loading
- Available with a cordura nylon storage bag
- Rated for 2 people with a working load of 1,100 lbs

Part No.	Description
SCE107007	Sure-Strong 7-ft (2m) tripod, aluminum, 10,752 lb (48 kN)
SCE1074411200	Sure-Strong work winch, 200-ft (61m) galvanized wire rope, with bracket (compatible with Lynx Tripod and Sure-Strong Tripod)

Sure-Strong Tripod
Part No. SCE107007

Aluminum Extruded Head Assembly (2) Forged Steel Anchors

Self Locking Head Assembly

Powder Coated Paint Finish

Locking Legs Adjust in 5" (14cm) increments

Total Weight: 43.5 lbs (20 kg)

Non Slip Rubber Pads on Feet

Leg Security Strap with Adjustable Friction Buckle

Collapsed Storage Size 10" x 61" (25cm x 152 cm)
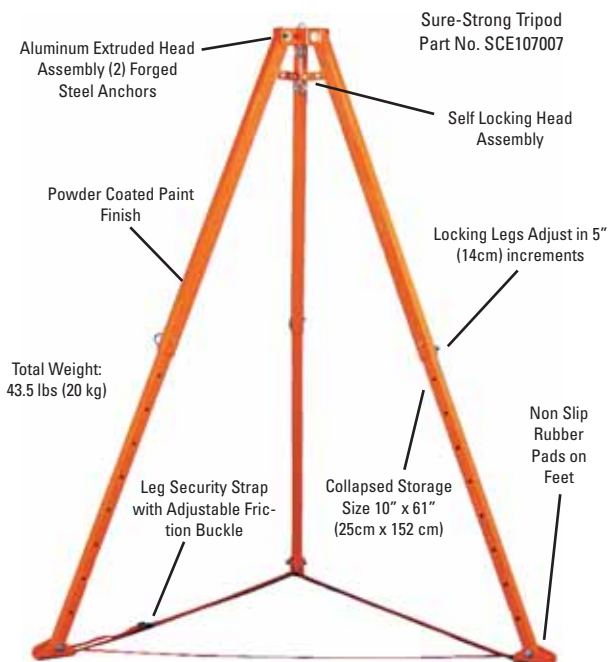
FP Rescue Kits

Bucket Truck Evacuation Kit

The Bucket Truck Evacuation Kit was created to provide all necessary equipment to allow a worker to safely evacuate an aerial bucket that has become inoperative. The kit includes:

- #2 Rope Bag (P/N - SRB430205)
- 10-ft Synthetic Ladder with Swivel Snaphook (P/N - SCE405010)
- Boom Anchor Strap (P/N - SSB22040)
- Anthron system (P/N - SDC726075) which includes Anthron device, Carabiners (2), 75-ft (22m) 7/16" rope

Part No.	Description
SKITSMT001	Bucket Truck Evacuation Kit

Sure-Strong Work Winch
Part No. SCE1074411200

Boom Anchor Strap

Rope Ladder

Anthron System

Bucket Truck Evacuation Kit
Part No. SKITSMT001

Fall Protection

Suretyman™ Rescue Utility System

The Suretyman Rescue Utility System incorporates all the features professionals have come to expect from a first class rescue system. The system is primarily used for raising and lowering people or equipment in rescue and industrial work access and is ideal for confined space applications.

The Suretyman Rescue Utility System features:
- Pulleys equipped with a built-in anti-reversing lock
- Only a 10 lb force is all that is required to hold a 220-lb (90 kg) load
- Suretyman ascender attached to both the operating rope and the user via a securing rope - if the operating rope accidentally releases, the ascender automatically stops the descent
- Rapid deployment
- Virtually maintenance free
- Rated for 2-person load
- Compact and light weight with a standard system weight of 17 lb (7.7 kg)
- Versatile for rescue & access
- Multi-purpose ascent or descent
- Rated capacity of 600 lb (272 kg) for personnel and materials
- Standard rope length of 200 ft (66m) with a maximum rope length of 800 ft (267m)

Part No.	Description
SRS15200	Suretyman Rescue Utility System (200' length)

PLEASE NOTE:

Due to a 4:1 mechanical advantage, the user should order the Rescue Utility System with 4 times the length of rope necessary for their application. For example, the 200' system listed above provides a 50' working length. A 800' system provides a 200' working length.

Suretyman Rescue Utility System can be used in conjunction with the Sure-Strong Tripod (p.183)
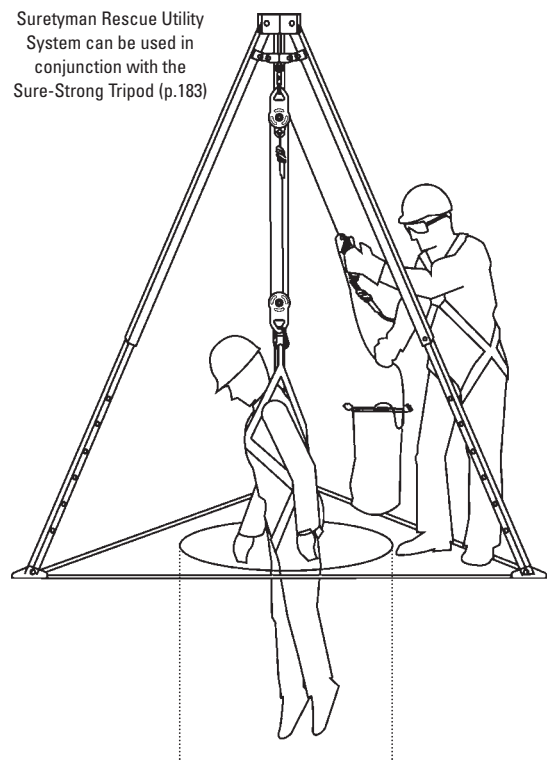
Storage Bag

Suretyman Rescue Utility System Part No. SRS15200

Carabiner

Upper Anti-Reversing Double Pulley

Right-Handed Ascender (Standard)

Securing Rope with Carabiner

Lower Anti-Reversing Double Pulley

Carabiner

Left-Handed Ascender (Optional)

Suretyman 7/16" (11mm) Static Kernmantle Rope
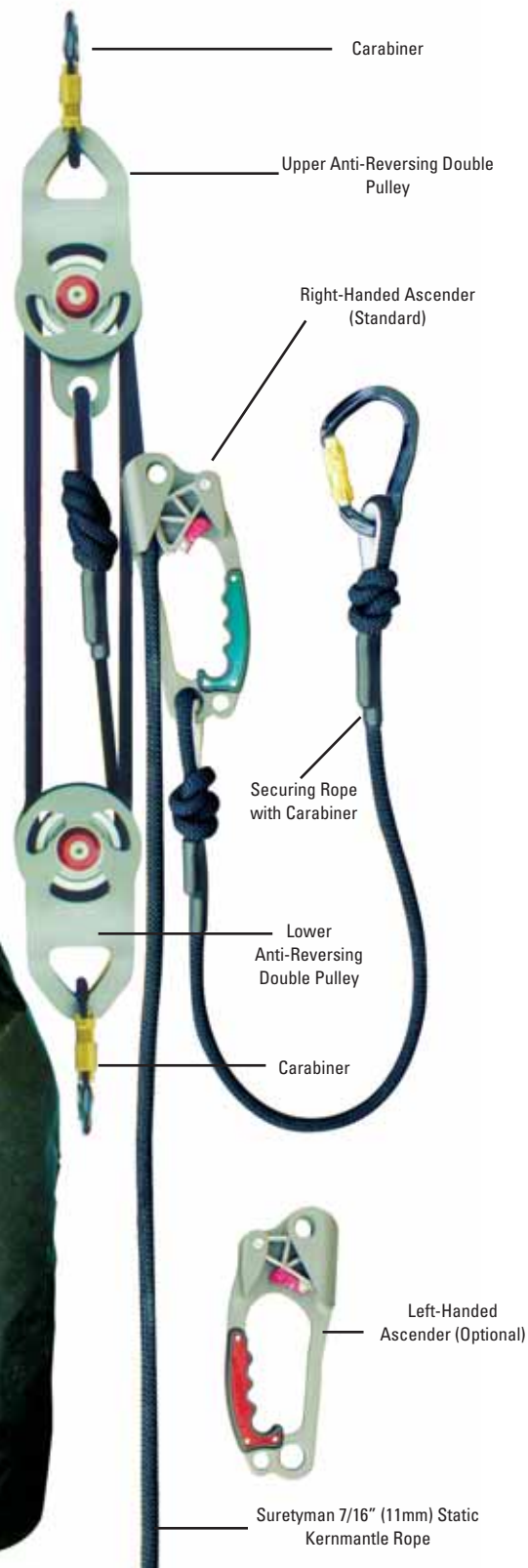
Basic High Angle Rescue Kits

The Basic High Angle Rescue Kits were designed for the Fire Department planning to assemble a high angle rescue team. A complete high angle rescue system consists of two kits: a Belay System Kit, and a Raising/Lowering System Kit.

The Belay system kit includes:

- 3 large "D" shaped rescue carabiners (P/N SRCC641) - NFPA approved Class G
- 200-ft (61m) 1/2" rope, orange and white (P/N - SRP504860SL) - NFPA approved
- 33-ft (10m) 9mm accessory cord (P/N - SRP500900) for making load- release hitch
- 65" (1.65m) 8mm accessory cord & 53" (1.35m) accessory cord (P/N - SRP500860) make-up the tandem Prusiks
- 6-ft (1.8m) Suretyman anchorage sling (P/N - SFP2267406)
- #3 rope bag, orange (P/N - SRB430301)

The Raising/Lowering System includes:

- 6 large "D" shaped rescue carabiners (P/N - SRCA641) - NFPA approved Class G
- Stealth rigging plate (P/N - SRSPR5990)
- 200-ft (61m) 1/2" rope, red (P/N - SRP504863SL) - NFPA approved
- 33-ft (10m) 9mm accessory cord (P/N - SRP500900) for making load-release hitch
- 65" (1.65m) 8mm accessory cord & 53" (1.35m) accessory cord (P/N - SRP500860) make-up the tandem Prusiks
- 53" (1.35m) 8mm accessory cord (P/N - SRP500860) for creating the Prusik for connecting the raising system
- 2 Single Pulleys, 4" (100mm) (P/N - SPPPU8710) - Prusik minding pulleys
- Brake Bar Rack (P/N SRS14001) - lowering device is NFPA approved
- 6-ft (1.8m) Suretyman anchorage sling (P/N - SFP2267406)
- #3 rope bag, black (P/N - SRB430305)

Part No.	Description
10030023	Belay System Kit
10030024	Raising/Lowering System Kit

Belay System Kit
Part No. 10030023

53" 8 mm Accessory Cords

Storage Bag

1/2" Rope

Anchorage Sling

Carabiners

9 mm Accessory Cord

65" 8 mm Accessory Cords

Pulleys

Raising/Lowering System Kit
Part No. 10030024

1/2" Rope

Brake Bar Rack

Stealth Rigging Plate

Anchorage Sling

Carabiners

Storage Bag

9 mm Accessory Cord

8 mm Accessory Cords

Fall Protection

Emergency Rescue Bag System

The Emergency Rescue Bag System is designed for rescue on electrical and communication towers. Developed for use in restrictive environments, this extremely lightweight system was primarily designed for tower rescue; however, the system can be used to perform rescues on almost any vertical structure. The Emergency Rescue Bag System consists of a pre-rigged lowering System that comes in a variety of lengths. The users of this product must receive training by an approved trainer.

Part No.	Description
SRS323150	Emergency Rescue Bag System, 150-ft (45 m) working length
SRS323300	Emergency Rescue Bag System, 300-ft (90 m) working length

PLEASE NOTE:
Due to a 2:1 mechanical advantage, the user should order the Emergency Rescue Bag System with twice the length of rope necessary for their application. For example, the SRS323150 uses 300' of rope to achieve a 150' working length. The maximum system available provides a 400' working length with 800' of rope.

Emergency Rescue
Bag System
Part No.
SRS323150
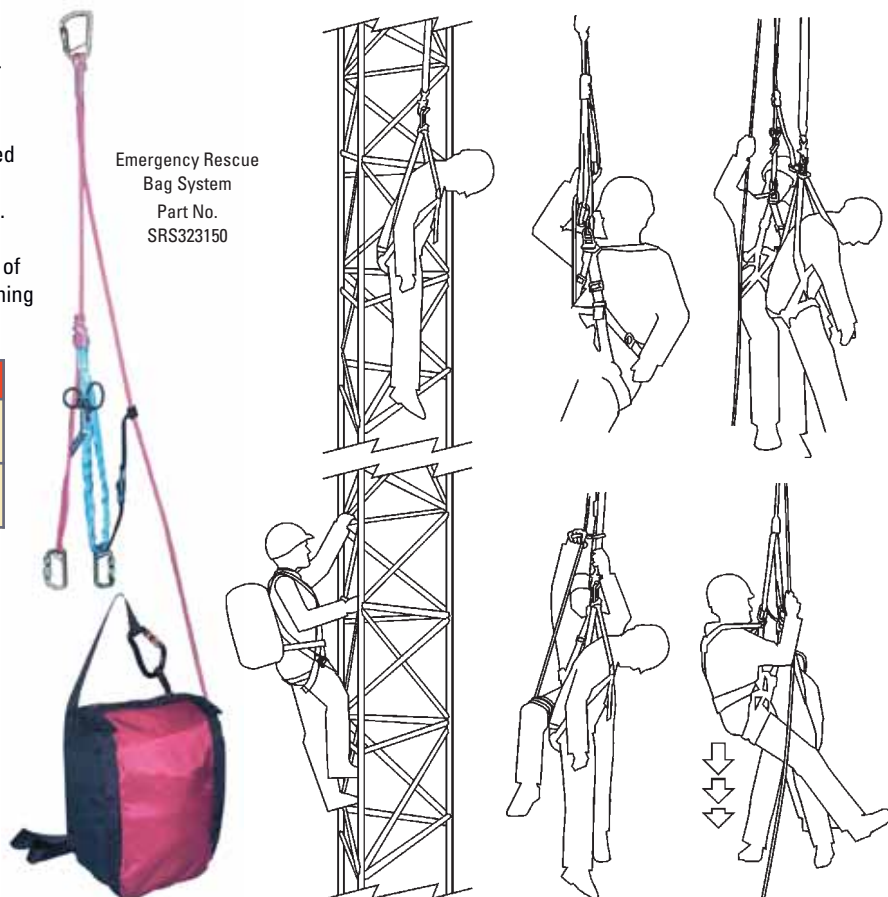
General Accessories

Hands-off™ Chisel Grip

The Hands-Off Chisel Grip keeps hands away from the point of contact. The Hands-Off Chisel Grip is ergonomically designed to match the specific shape of the human hand for a comfortable and firm grip. Additional features of this modern design include:
- Permits faster, safer, more accurate work.
- Easy adjustment to hold a variety of chisels and stakes up to 1" in diameter.
- Vibration-absorbing handle.
- Eases awkward hand positioning.
- Economical.
- Spark resistant.

Part No.	Description
10040018	Hands-Off Chisel Grip

Hands-Off Chisel Grip
Part No. 10040018

Ergonomic Tool Holders
- Holds wrenches, chisels, etc.
- Vibration-absorbing design
- Attach to broom handles and mops for better grip
- Eases awkward hand positioning

Part No.	Description
507005	Tool Holder, 18"
507006	Tool Holder, spark resistant, 18"

18" Tool Holder
Part No. 507005

MSA Custom Solutions

Every business is unique, and MSA recognizes that YOUR Fall Protection systems need to be custom-designed and installed to meet YOUR needs.

To help you, we have carefully selected and trained specially qualified contractors, who can personally work with YOU to deliver exactly the services your hazardous situations demand.

These MSA Fall Protection System Integrators are independent organizations throughout North America whose local specialists can provide one or more customized MSA Fall Protection solutions for your business. Your MSA System Integrators will combine their experience and knowledge of practical applications with MSA Fall Protection products to meet your specific needs for any industry, including forestry, construction, oil & gas, petrochemical, mining, manufacturing, utilities, entertainment, and transportation.

Whether you choose complete turnkey services or individual services, you'll receive experienced application and design, fabrication, and installation of whatever MSA Fall Protection systems you need.

Engineering Services

Registered professional engineers will visit your site to analyze and determine the scope of work. Then they will design and draft engineering drawings, and later, follow up with a construction site review to ensure that your Fall Protection system has been installed as designed.

Installation

Factory-trained and certified installation technicians will execute the design specifications and carry out the manufacturer's instructions. Technicians can also inspect and re-certify an existing MSA Fall Protection system.

Fabrication

Knowledgeable fabricators will build whatever structural components are required to support your primary MSA Fall Protection system, from simply connecting brackets that attach to your building columns or beams, to assembling complete free-standing support structures. You can trust that your fabricated components will comply with all applicable governing codes and standards.

Training

High-quality training programs at a reasonable cost will be tailored to the unique issues of your industry and installation. MSA's commitment to increasing demands for technical training in Fall Protection, post-fall retrieval, and rescue will be fulfilled at your facility.

Why Choose MSA Custom Solutions?

- You get the broadest product range, to ensure the best possible fall hazard solution for your specific application.
- MSA System Integrators work directly for you and are responsive to your project requirements.
- MSA System Integrators offer cost-effective services direct to you, the MSA customer.
- You will benefit from dedicated regional System Integrators as well as nationally prominent organizations that specialize in particular industry applications.

How?

It's easy! To receive your quotation from MSA CUSTOM SOLUTIONS:

1. Contact your local MSA distributor, MSA Sales Associate, or call our MSA Customer Service at 1-800-672-2222.
2. Your request will be forwarded to the MSA System Integrator, who will contact you about your project's specific requirements.
3. You will receive a written estimate for your system.

For more information call MSA Customer Service Center at 1-800-672-2222 and request the Custom Solutions Catalog (Bulletin #2300-100)

Fall Protection

Sure-Rail™ Horizontal Lifeline

The Sure-Rail system is a rigid rail horizontal lifeline system typically used in areas when there is limited clearance below the working surface. The Sure-Rail system is available in many standard configurations, but can also be customized to fit your application. The Sure-Rail system provides:

- Ease of movement (smooth trolley action)
- Little or no deflection in the rail limits fall distance and fall arrest forces on the body
- Support for up to 4 workers on the system simultaneously.
- Meets all applicable OSHA regulations

The Sure-Rail horizontal rail system is installed by attachment to intermediate support members that act to stabilize the rail during normal flex and movement of the building structure. The intermediate supports are fabricated from hollow structural shapes (HSS). The HSS supports are connected to the rail by welded tabs at five-foot (1.5 m) intervals. The design of the HSS supports are the responsibility of a qualified engineer familiar with the project and manufacturer's requirements.

Sure-Rail Trolley

Sure-Rail Bolt

Sure-Rail Trolley

Carabiner

20' Cable Dyna-Lock SRL

Sure-Rail System

Sure-Rail

Sure-Rail Splice

Sure-Rail Anti-Slip off Collar

Sure-Rail Spacer

Sure-Rail Bolt

Top View

Sure-Rail Trolley

Side View

Sure-Rail is an engineered system and must be designed, installed, and used under the supervision of a qualified structural engineer, as required by US Federal OSHA and Canadian Provincial regulations.

Latchways Mansafe® Horizontal Lifeline

The Latchways ManSafe Horizontal Lifeline systems are designed to operate horizontally, around corners, and up or down inclines to offer continuous worker protection regardless of the building type or structure. ManSafe Horizontal Lifeline features include:

- Unsurpassed system flexibility
- Ability to support up to 6 workers per lifeline
- Unique Latchways Transfastener rotates freely through intermediate supports to enable hands-free operation

SafeRidge section with traveling eyebolt and endstop.

Saferidge™ System

The patented SafeRidge system is designed to provide fall protection on sloped roofs. This unique product combines a fall protection system with the waterproof and venting characteristics of a traditional roof ridge section. Its low profile and unobtrusive appearance can accommodate a wide variety of roof profiles. Advantages of the SafeRidge system are:

- Can be installed on new or existing buildings
- Can be installed quickly and easily by your personnel
- Cost-effective – provides a safety system and apex weather proofing in one product
- Accommodates up to 4 workers per system

A complete system consists of the saferidge section, endstops, traveling eyebolt, a full body harness, and a rope grab.

Please call 1-800-672-2222 and let us help you specify the system that will meet your needs.

HANDS–ON, COMPREHENSIVE COURSES

Learn from the Experts

MSA offers the following Fall Protection training courses:

Fundamentals of Safety At Heights

Topics include:

- Fall hazard recognition
- Basic fall prevention and protection principles
- Selection, application, and use of fall protection systems
- Review of applicable, industry-related standards

Competent Person for Equipment Inspection

Topics include:

- Proper equipment cleaning & storage
- Formal inspection procedure & documentation process
- Review of applicable, industry-related standards

Safety At Heights Program Management & Rescue Planning

Topics include:

- Round-table discussion of fall protection issues
- Writing or reviewing of a current, up-to-date fall protection program or policy
- Planning for an effective and swift rescue
- Selection and use of manufactured rescue systems

Competent Person for Safety At Heights

Topics include:

- Combines Fundamentals, Equipment Inspection, and Management & Rescue courses

Tower Climbing Safety & Rescue

New!

Topics include:

- Selection & application of fall protection systems
- Basic fall protection principles
- Review of applicable, industry-related standards
- Meets both Bechtel and American Tower's current training requirements for tower climbers

Industrial Rescue

New!

Topics include:

- Review of applicable, industry-related standards
- High angle rescue techniques
- Selection, application, and use of rescue systems; such as Raising/Lowering
- Manufactured rescue systems versus rope access rescue systems
- NFPA-approved rope access courses available

Additional Courses

- Confined Space Entry and Retrieval
- Fall Protection & Rescue for Railway Bridges
- Competent Person Refresher
- Competent Person Train-The-Trainer

MSA has also designed many types of custom training courses and interactive training programs for a wide range of industries including:

- Mining Industry
- Automotive Industry
- Railroad Industry
- Utilities Industry
- Telecommunications Industry

With MSA, you have the experts to help you find the best solution for your Safety At Heights training needs.

Registration Information

We invite you to attend our next training session, which will prove to be a comprehensive and valuable experience. For registration information, please contact the MSA Customer Service Center by phone (1-800-672-2222) or by fax (1-800-967-0398), or log onto our web site at www.MSAnet.com.

Hands-on Training for proper fit of a harness at an off-site customer facility.

Training Centers Butler, PA Englewood, CO

Students simulate falls in Training Structure at the Denver Facility.

Let us train you at your facility!

Ultralight™ Cap Lamp System

The state-of-the-art Ultralight Cap Lamp System has the brightest prefocused spotlight available (tungsten halogen) and provides exceptionally brilliant illumination of the work site. It has a long-life Luminator battery and a variety of battery charging equipment available.

The two-inch diameter, state-of-the-art Ultralight Cap Lamp headpiece is made of high-impact polycarbonate and consists of only five major parts:

- A one-piece polycarbonate bezel/lens (glass-laminated lens optional).
- A computer-designed, prefocused bulb/reflector assembly, featuring a high output, tungsten-halogen bulb, accurately positioned in the focal point of the reflector to assure a good spot.
- A plug-in tungsten-halogen bulb emergency escape light.
- A main housing with a printed circuit board for bulb and battery cable connections.
- A three-position switch.

A wire spring keeps the bulb/ reflector assembly properly resting against the lens to reduce vibration and mechanical shock.

Remote Adapter

The prefocused bulb/reflector assembly eliminates the need for a focusing mechanism. Both the on/off switch and the charging contact are located in the headpiece housing. With only four major parts, inventory, replacement stocks and downtime are minimized.

Remote Adapter Cover

The tungsten-halogen bulb provides a white, bright light, achieved with little battery power consumption, because tungsten-halogen bulbs are extremely efficient. In fact, more light output is achieved without reduction in bulb life. The light is also softer to miner's eyes.

In addition, the light output is more consistent, providing 85 to 95% of its initial light output, even at 70% of life expectancy. The bulb has a 1.0 amp rating at 4 volts. This lower amperage allows for longer cap lamp use between charges.

The prefocused bulb/reflector assembly efficiently concentrates over 90% of the light into a highly concentrated beam for exceptionally bright illumination of the work site.

Ultralight Specifications

Operating voltage: 4.2 to 3.8

Operating Time: Up to 14 hours (Luminator Plus)

Battery Dimensions: $7\frac{1}{4}$" x $5\frac{1}{4}$" x $1\frac{1}{2}$"

Weight: 4 lb 12 oz

Light Intensity: @ 10 feet (using standard bulb with fully charged battery) = 1450 LUX

Bulb Amperage: 1.0 (nominal)

MineSpot® Luminator® Battery

The MineSpot Luminator Battery is assembled as a complete sealed unit that requires nothing more than routine charging and periodic watering. The battery case is impact-resistant polycarbonate with reinforced bottom corners and molded-in belt loops. The Luminator Battery was designed for low maintenance and long life. Watering is required only every 4–6 weeks. The MineSpot Luminator Battery must be charged after each use.

Approvals and Standards

All MSA Cap Lamps have Mine Safety and Health Administration Certifications (MSHA certification) for use in an atmosphere of methane and air only.

MineSpot Cap Lamp System (shown with new battery top and new clip system)

Cap Lamp System and Accessories

Ultralight Cap Lamp System

Ultralight Cap Lamp, with acid-filled Luminator Plus battery (16 AH)	817172
Ultralight Cap Lamp, with acid-filled Luminator Plus battery (16 AH) and remote power takeoff adapter	817170
Ultralight Headpiece, cable and cover assembly (no battery	484820
Ultralight Headpiece, cable and cover assembly (no battery), with remote power takeoff adapter	813230

MineSpot Luminator Battery

MineSpot Luminator Plus battery (16 AH), with acid	817178
Battery Clip, pack of 10 (for new, taller battery top) **NEW!**	10078291
Screw for Battery Clip (P/N 10078291), pack of 10	10078292
Clips (2 required) for Luminator battery (with old battery top)	817182

Power Builder Charger Stations

Power Builder single-unit, AC	10002436
Power Builder 10-unit	10002439
Circuit Board Module, replacement	10002462
Transformer, replacement	10002464
Leg Assembly Kit (up to 60-station) - inlcudes right and left leg	10002465

Cap Lamp Spare Parts and Accessories

Bulb/Reflector	480374
Bezel/Lens	476705
Cable Assembly	484688
Secondary Bulb	637035
Bezel with glass laminated lens	491869
Swivel Adapter	491870
Comfo-Cap (white), with lamp bracket and cord holder	91522
Battery Pouch, nylon (fits MSA and Koehler)	803100
Remote Adapter with battery top	801581

Adapters for Koehler (Wheat) Cap Lamps and Charging Equipment

Using these adapters will permit you to charge an MSA Ultralight Cap Lamp on Koehler (Wheat) equipment.	
1 Single-unit adapter for use with Wheat single unit slide-on (Mark II) or turnkey (Mark V) chargers	491116
CAUTION: Do not mix cap lamp components from different manufacturer for use in applications where MSHA approval is required.	

Service and Repairs
For service on all MSA lighting equipment, call 1-800-MSA-2222 or your local MSA distributor.

Power Builder® Charger Stations

MSA offers a variety of charging stations, including an AC single-unit and a 10-unit station. The 10-unit charger can be tabletop mounted, wall mounted, or stacked to convert into a multi-station charger for up to 60 stations.

The Power Builder Charger uses a microprocessor control that is efficient and never needs recalibration. It uses constant current and constant potential charging. No adjustments are required. LED colored lights let you know the condition of the battery at all times. No rectifier is required. The charger is self-contained. All AC chargers can run on 110 or 220 current.

See Bulletin 02-00-01-MC for details on all MSA Cap Lamp Systems and Accessories.

Single-unit Power Builder charger

Power Builder 10-Unit Charging Station

Power Builder 10-Unit Charging Stations are stackable. Front only or back-to back. Leg kit shown.

Power Builder Charger Stations	
Power Builder single-unit, AC	10002436
Power Builder 10-unit	10002439
Circuit Board Module, replacement	10002462
Transformer, replacement	10002464
Leg Assembly Kit (up to 60-station) (includes right and left leg)	10002465

Note: Up to 6 ten-unit chargers can fit on one leg kit. The chargers would be set up back-to-back.

Miscellaneous Mining Equipment

Miner's Support System and Multipurpose Pouch

The Miner's Support System from MSA is a lightweight but sturdy miner's belt that offers comfort, lumbar support, versatility and durability. It enables the miner to carry the cap lamp battery pack, filter self-rescuer, SCSR, tools, etc., on the job. A one-inch reflective strip sewn over a two-inch nylon strap makes the support system highly visible.

For more complete information, see Bulletin 0115-03.

Miscellaneous Mining Equipment	
Miner's Support System, small (28–34)	696757
Miner's Support System, medium (34–44)	696758
Miner's Support System, large (44–52)	696759
Multipurpose Miner's Pouch	803100
Multipurpose Miner's Pouch with Velcro closure	804655

⚠ WARNING

The Miner's Support System cannot be used as a safety belt as it is not designed to withstand the load of a free-fall hazard.

Multipurpose Miner's Pouch

Mining and Specialty Equipment

W65 Self-Rescuer Respirator

Provides emergency protection against carbon monoxide

The W65 Self-Rescuer Respirator provides emergency respiratory protection against carbon monoxide gas resulting from underground fires or explosions. A one-time-use device for escape purposes only, it provides respiratory protection against carbon monoxide in otherwise respirable air; it should not be used in atmospheres containing less than 19.5 percent oxygen or in atmospheres containing other toxic gases and vapors. Protected by a rugged stainless steel case, it weighs only 2.2 pounds.

Approvals

The W65 Self-Rescuer Respirator is approved by the Mine Safety and Health Administration (MSHA) and the National Institute of Occupational Safety and Health (NIOSH) (Approval No. TC-14G-82) for self-rescue from carbon monoxide. (Previously assigned Bureau of Mines Approval No. 14F-76.)

For more complete information, see Data Sheet 10-00-10.

W65   Holster   Boot

W65 Self-Rescuer with Boot and Holster

W65 Self-Rescuer Respirator	
Complete Assemblies	
W65 Self-Rescuer Respirator, complete in carton	455299
W65 Self-Rescuer Respirator, w/protective boot & neoprene holster	461100
Accessories	
Holster	
Adapts Self-Rescuer to belts up to 2-1/2 inches in width.	
Leather Holster	455535
Neoprene Holster	460027
Protective Boot	
Protective black rubber boot for Self-Rescuer.	
Protective Boot	449428
Self-Rescuer Training Model	
A special training model, which does not contain chemicals, simplifies training in the use of the W65 Self-Rescuer. After use, it can be cleaned, reassembled, and used again.	
Training Model, in red case	455696

Escort ELF® Sampling Pump

The Escort ELF Sampling Pump can be used for personal and area sampling. The state-of-the-art electronic laminar flow sensor, consisting of a laminar flow element and pressure sensor, provides constant flow (volume) control, with ±2.5% regulation of flow rate (from 1 to 3 lpm) and automatic compensation for changes in battery voltage, temperature, altitude, and sample load.

An internal secondary standard calibrates the pump continuously and needs to be checked against a primary standard only once a month (or every 200 hours for coal mine dust sampling). U.S. Patent No. 5,295,790.

Approvals

Escort ELF Sampling Pumps are NIOSH-certified for coal mine dust sampling (TC-74-030). They are MSHA-certified as intrinsically safe for underground use (Approval No. 2G-3924-1). The Escort ELF pump has been approved for intrinsic safety by UL for use in Class 1, Groups A, B, C, D; Class II, Groups E, F, and G; and Class III, Division I locations.

Assemble-to Order (ATO) System: You Make the Choices

The ATO System makes it easy to custom order Escort ELF pumps, configured exactly the way you want them. Choose from an extensive line of base instrument components and accessories. See pages 94–95 or Bulletin 0810-33 ATO System and Price Information for the Escort ELF Sampling Pumps for more information.

MSA Cassettes

General-Purpose Cassette

The general-purpose cassette is a sample cassette that can be used for silica sampling. This cassette can also be used for all airborne particulate collection not limited to quartz or silica.

This cassette is individually packaged in a sealed plastic bag. Each cassette is weighed by a robot to .01 mg at 70°F +/- 5° and 455 RH +/- 10%. Each cassette is attached to a Dust Data Card which includes the cassette serial number and actual weight. The cassette inlet contains a tamper-proof deflector plate, and the outlet contains an anti-blow-back check valve. Both the inlet and outlet openings are capped to ensure cleanness. The perimeter of the cassette housing is sealed with tamper-proof sealing tape.

Because of the extreme accuracy of the MSA weighing process, users of this cassette can sample the atmosphere for dust particulate and have the analytical analysis performed with complete confidence in its accuracy.

General Purpose Cassette

Coal-Dust Sampling

MSA's preweighed filter cassettes consist of a sealed outer plastic capsule and an inner preweighed filter capsule. Each cassette is supplied with a mine data card for the weight of the filter capsule to be recorded and sent in a mailing carton addressed to MSHA.

Coal Dust Sampling Cassette

MSA Cassettes	
Preweighed filter cassette with 5-μ pore size PVC filter and Mine Data Card—Coal Dust Sampling	803462
General-Purpose Cassette	711361

Mining Detector Tube Set

The Mining Detector Tube Set is a variety pack of various detector tubes, designed specifically for the mining industry. The set, conveniently packaged in boxes of 12 tubes, contains:

3 Carbon monoxide tubes
2 Nitrogen dioxide tubes
3 Nitrous fumes tubes
4 Natural gas/methane tubes

Mining Detector Tube Set	
Mining Detector Tube Set	65586

Note: For information about Detector Tube Pumps, see p. 85.

Cyclone Assembly

For mine atmosphere sampling, the MSA preweighed filter cassettes must be used with a Cyclone Assembly to collect the respirable dust fraction. The 10mm diameter assembly is used to separate respirable dust particles from non-respirable dust particles.

Cyclone Assembly	
Cyclone Assembly	456243

Cyclone Assembly

Solaris® Multigas Detector with Nitrogen Dioxide Detection

The Solaris Multigas Detector is an economical monitor providing simultaneous detection of up to 4 of the following gases: CH_4, CO, O_2, and NO_2. One of the smallest, lightest four-gas monitors on the market, the Solaris Detector is ergonomically designed and provides the best value in its class. Weighing less than 8 ounces, it is comfortable enough to be worn all day and provides reliable protection without interfering with the user's range of motion.

Encased in a rubberized armor that absorbs impact, the Solaris Multigas Detector is designed for the harshest industrial environments, with an IP 6/5 rating for superior protection against liquid and dust ingress. Easily configured to detect up to 4 gases simultaneously, the detector features a world-class triple alarm system with high-intensity, high-visibility alarm lights, an audible alarm of over 100 dB, and a strong vibrating alarm.

The versatile display features backlighting, providing exceptional contrast for easy reading in low-light conditions and from a variety of angles. An alphanumeric message bar displays commands in "plain English", easily guiding users through various instrument functions. Simple, intuitive calibration is accomplished with the push of a single button.

The Solaris Multigas Detector is powered with a rechargeable lithium ion battery that offers 14+ hours of continuous run time and outperforms other batteries in extreme environmental conditions. The battery fully recharges in under 4 hours and maintains over 80% of its original capacity after 500 recharge cycles. A charging cradle and power cord are included.

An optional powered sampling pump is contained within the sampling probe accessory. It can be used with up to 50 feet of tubing for remote sampling and includes an extensive filtering system to keep out liquid and particulate contaminants. The Solaris Multigas Detector also features an outstanding, 2-year all-inclusive warranty.

Solaris Multigas Detector with Nitrogen Dioxide Detection

MSHA-Approved Solaris Kits

All kits include a MSHA Approved Solaris with datalogging option included, calibration cap assembly and instruction manual on CD-rom.

4-Gas (CH_4, O_2, CO, NO_2)	10070963
4-Gas (CH_4, O_2, CO, H_2S)	10070857
3-Gas (CH_4, O_2, CO)	10070859
2-Gas (CH_4, O_2)	10070962

Calibration Cylinders

Pentane Standard 1.45%	Methane Standard 2.5%	15% Oxygen	60 ppm CO	20 ppm H_2S	10 ppm NO_2	100 ppm Isobuty-lene	Econo-Cal (34 Liter)	RP (58 Liter)
•		•	•	•			10048280	10045035
	•	•	•	•			10048981	10048890
	•	•		•			10048888	10048889
	•	•	•				10058172	813718
	•	•	•		•		10049056	10058171
						•	10048279	494450

Mining and Specialty Equipment

Solaris® MSHA Assemble-to-Order (ATO) Options

- To create your instrument configuration, select the instrument option code and mark them in the boxes to the right.

		Options	Code	Selection
A. Datalog Options	The datalog option enables the Solaris Multigas Detector to store exposure data for easy retrieval at a later time. To download the Solaris data the MSA datalog kit (p/n 710946) must also be purchased. Datalog option is now standard.	**Datalog Options** Standard rechargeable instrument (includes Datalogging) Standard Alkaline instrument (includes Datalogging)	D B	
B. Combustible Sensor Options	If a combustible gas sensor is desired, choose option "M".	**Combustible Sensor Options** None 0-5% CH_4	0 M	
C. Oxygen Sensor Options	To choose to have an oxygen sensor installed in your new Solaris Multigas Detector, choose selection 1. For no oxygen sensor, enter a "0".	**Oxygen Sensor Options** None O_2 Sensor	0 1	
D. Toxic Sensor 1 Options	To choose to have an carbon monoxide sensor installed in your new Solaris Multigas Detector, choose selection 1. For no oxygen sensor, enter a "0".	**Toxic Sensor 1 Options** None CO Sensor	0 1	
E. ToxicSensor 2 Options	To choose to have a hydrogen sulfide sensor installed in your new Solaris Multigas Detector, choose selection 1. For no hydrogen sulfide sensor, enter a "0". To choose to have a NO_2 sensor installed, choose 3. For no NO_2 sensor, choose 2.	**Toxic Sensor 2 Options** None (H_2S Sensor not installed) H_2S Sensor None (NO_2 Sensor not installed) NO_2 Sensor	0 1 2 3	
F. Battery Charging Options	A Solaris-specific battery charger must be used to recharge the batteries in the Solaris unit.	**Battery Charging Options** None North American outlet-compatible	0 N	
G. Sampling Pump	It is now possible to combine the sampling pump and probe for the Solaris unit into one easy-to-use accessory. The pump probe is very versatile and can be attached to the Solaris instrument in seconds. The built-in Water Stop filter helps to ensure the sampling system is not contaminated with dirt and debris during use.	**Sampling Pump** None Universal pump probe	0 1	
H. Calibration Kits	MSA provides two options for performing instrument calibration. The cost-effective Econo-Cal (34 liter) cylinder and fixed flow regulator provides an economical means to calibrate the Solaris instrument. The Model RP calibration kit also has a fixed flow 0.25 lpm regulator and provides the user with a larger capacity (58 liter) calibration gas cylinder.	**Calibration Kit Options** None Econo-Cal Calibration Kit Model RP Calibration Kit	0 1 2	

Your Model Part Number   Please write in numbers from selections above in appropriate boxes and contact your Safety Products Distributor to place your order.

Selection …   **A**   **B**   **C**   **D**   **E**   **F**   **G**   **H**

A-SOLMSHA- ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐ – ☐

For information about other instruments and accessories that could be used in mining applications, please refer to these pages:

Order programs below online at www.tangibledata.com/MSA

Title and Comments	Running Time	Year Released
Care and Use of the **A-1000** and **Millennium Gas Mask** *For use by First Responders and Law Enforcement personnel. This program uses and shows cartridges and canisters approved for use prior to 2004, DOES NOT cover specific CBRN canisters.*	24 min.	2003
Proper Care & Use of the **Advantage 1000 Full-Face Respirator**	15 min.	1994
Proper Care & Use of the **Comfo Classic Respirator**	20 min.	1994
Use & Maintenance of the **Ultra-Twin Respirator**	22 min.	1982 (rev. 1995)
Proper Care & Use of the **OptimAir MM PAPR for the Abatement Industries**	24 min.	1993
Overview of **OptimAir TL PAPR**	15 min.	2007
Fit Testing MSA Respirators with the **Qualitative Fit Test Kit**	10 min.	1995
Proper Care & Use of the **PremAire Supplied-Air Respirator System**	43 min.	1994
Proper Care & Use of the **PremAire Cadet System**	32 min.	1993
Proper Care & Use of the **Hip-Air Apparatus**	28 min.	1992
Proper Care & Use of the **Pressure-Demand Air-Line Respirator**	44 min.	1986
Proper Care & Use of **Constant-Flow Air-Line Respirators**	27 min.	1992
How to Use & Maintain the **Custom Air V Escape Respirator**	18 min.	1988
Proper Care & Use of Your **Response Escape Hood** from MSA	11:15 min.	2002
Proper Care and Use of the **Xtreme Air Mask with HUD/RIC**	40 min.	2003
Proper Care & Use of the **MMR Xtreme Air Mask with the FireHawk MMR and the ICM Unit**	36 min.	2001
FireHawk Disassembly & Reassembly Instructional Program	11:46 min.	2002
Proper Care and Use of the **Quick-Fill System**	min.	1992
Proper Care & Use of the **Evolution 5000 Thermal Imaging Camera**	30 min.	2002
Orion G Multigas and Leak Detector Goose Neck and Coiled Hose Version, Rev.01	15 min.	2003
Proper Care & Use of the **Orion Multigas Monitor**	29 min.	2001
Proper Care & Use of the **FiveStar Alarm**	31 min.	1997
Proper Care & Use of the **Explosimeter Indicator, Model 2A**	24 min.	1982
Proper Care and Use of the **Pulsar Single-Gas Detector**	8 min.	2001
A Video Guide to **Personal Sampling Techniques**	22 min.	1994
Overview of the **Galaxy Gas Tester**	10 min.	2004
Harnesses—Donning and Doffing Instructions for the Pullover, Vestype, FP Pro and Tradesman Harnesses	—	—
Using the **RCD (Remote Connect/Disconnect) System**	6:30 min.	1998
Assembly and Use of the **Horizon Rebar Anchorage System**	10:22 min.	2000
Davit Systems	9:59 min.	1999
Assembling the **Fall-Rescue Work System**	9:07 min.	1999
Dyna-Line Horizontal Lifelines	—	—
Elements of **Fall Protection**	—	—
Gravity Harnesses—Donning and Doffing Instructions	—	—
Facing the Real Dangers of **Confined Spaces**	28 min.	1993

Order programs below by MSA part number (call MSA Customer Service)

Title and Comments	Running Time	Year Released	VHS Part No.	DVD Part No.
How to Use & Maintain the **PAPR** (Powered Air-Purifying Respirator)	40 min.	1987	696816	CALL
SCBA Rescue Belt *Available on CD only.*	20:00 min.	2004	CALL	CALL
Proper Care and Use of the **AirHawk Air Mask**	36:22 min.	2004	10058407	10058408
Proper Care & Use of the **MMR Xtreme Air Mask**	37 min.	1999	696838	CALL
Proper Care & Use of the **Ultralite II Air Mask** and Inspection and Maintenance Procedures	49 min.	1988	696833	CALL
Proper Care and Use of the **Custom 4500 II Air Mask** and Inspection and Maintenance Procedures	50 min.	1988	696834	CALL
How to Use and Maintain Your **MSA Breathing Apparatus in Cold Weather**	10 min.	1991	696817	CALL
Evolution 5000: An Overview of Thermal Imaging and Advanced Applications	14:00 min.	2004	—	CALL
Overview of the **Solaris Multigas Detector**	15 min.	2003	10049318	CALL
Proper Care & Use of the **Passport PID II Organic Vapor Monitor**	37 min.	1997	711025	CALL
Proper Care & Use of the **Passport Personal Alarm**	42 min.	1994	806094	CALL
Proper Care & Use of the **Gasport Gas Tester**	52 min.	1996	814453	CALL
Proper Care & Use of the **MicroGard Portable Alarm**	35 min.	1991	801135	CALL
Use of the **ProGard Personal Alarm**	7:30 min.	1998	10008990	CALL
An Overview of the **Sirius Multigas Detector**	15:50 min.	2004	10050856	CALL
An Overview of the Care & Use of the **Pulsar+ Gas Detector**	15 min.	2002	10041767	CALL
Elements of **Fall Protection (Français)**	—	—	10036350	CALL
Latchways ManSafe System	—	—	SFPVIDEO003	CALL
Fall Protection—Steel Erection	—	—	SFPVIDEO008	CALL
Fall Protection—Steel Erection (Español)	—	—	SFPVIDEO011	CALL
Belt/Harness Drop Test	—	—	SFPVIDEO012	CALL
Proper Care & Use of **MSA Head Protection**	47 min.	1992 (rev. 2005)	696823	CALL
Proper Care & Use of the **Vanguard Helmet**	20 min.	1994	697283	CALL
Now Hear This! How **Hearing Conservation Programs** Can Work	15 min.	1984	696827	CALL
Field Inspection & Repair of Your **MSA CairnsHelmet Fire Helmet**	35.03 min.	2002	10041773	CALL

Product Index

Product Index

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Handy Reference Tools!

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Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.

ISO 9001 CERTIFIED Quality System

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