



MODEL NO.

USER INSTRUCTIONS MSA CARABINER



National standards and state, provincial and federal laws require the user to be trained before using this product. Use this manual as part of a user safety training program that is appropriate for the user's occupation. These instructions must be provided to users before use of the product and retained for ready reference by the user. The user must read, understand (or have explained), and heed all instructions, labels, markings and warnings supplied with this product and with those products intended for use in association with it. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.

1.0 CARABINER MODELS & SPECIFICATIONS

TABLE 1 CARABINER MODELS COVERED BY THESE INSTRUCTIONS

MODEL	MATERIAL	FINISH	PROOF LOAD		MINIMUM BREAKING STRENGTH		SIZE		APPROX. WEIGHT	
			LBF	kN	LBF	kN	IN	MM	LBS	KG
506259	Aluminum	Polished	2,500	11	5,000	22.2	0.9	23	0.2	0.1
506572	Steel	Zinc Plate	3,600	16	5,000	22.2	0.9	23	0.6	0.3
506308	Steel	Zinc Plate	3,600	16	5,000	22.2	2.0	51	1.6	0.7

1.1 SPECIFICATIONS FOR MSA CARABINERS

- MSA Carabiners identified in Table 1 meet ANSI Z359.1 and ANSI A10.14 standards and applicable OSHA regulations.
- Free fall distance (limit) must not exceed 6 ft (1.8 m) in accordance with OSHA and ANSI Z359.1; and, 5 ft (1.5 m) in accordance with ANSI A10.14 and the Canadian Occupational Health & Safety Act of 1990. The user must comply with applicable standards.
- When used as part of a personal fall arrest system, fall arresting forces must not exceed 1,800 lbf (8 kN).
- Capacity is 310 lb (140 kg) including weight of the user plus clothing, tools and other user-borne objects.



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

2.0 TRAINING

It is the responsibility of the purchaser of the MSA Carabiner to assure that Carabiner users are made familiar with these User Instructions and trained by a competent person in: (1) workplace hazard awareness and hazard identification, evaluation and control; (2) how to properly select, inspect, use, store and maintain the Carabiner; (3) how to determine and acceptably limit free fall distance, total fall distance, and maximum arresting force; (4) proper attachment locations and proper attachment methods including compatibility of connections to reduce the probability of accidental disengagement ("rollout"); (5) how to evacuate from a hazardous space; (6) what to do after a fall to protect the user from injury, including emergency rescue planning and execution; and (7) the consequences of improper use of the equipment and of failure to follow instructions and training. If the Carabiner is to be used for confined space applications, the user must also be trained in accordance with the requirements of OSHA regulation 29 CFR 1910.146 and ANSI Z117.1. Training must be conducted without undue exposure of the trainee to hazards. The effectiveness of training should be periodically assessed (at least annually) and the need for more training or retraining determined. MSA offers training programs. Contact MSA for training information.

3.0 HAZARDS IDENTIFICATION, EVALUATION & CONTROL



Do not use the MSA Carabiner unless a qualified person has inspected the workplace and determined that identified hazards can neither be eliminated nor exposures to them prevented.

Prior to selecting personal protective equipment, the user must make a workplace assessment of hazards and conditions where the equipment is required. Such assessment must, at a minimum, identify the presence of:

- Hot objects
- Climatic factors
- Moving equipment
- Flames
- Sharp objects
- Slippery surfaces
- Chemicals
- Sparks
- Weather factors
- Moving materials
- Unguarded openings
- Confined space hazards
- Abrasive surfaces
- Electrical hazards
- Environmental contaminants
- Unstable/uneven surfaces
- Heat-producing operations

Foreseeable changes in any of these conditions, taken individually or collectively, must be identified. The materials and construction of the equipment must be considered in the selection process such that these workplace conditions are suitably addressed and responded to. The equipment must match the work situation and workplace environmental factors.

The workplace assessment must identify all paths of intended user movement and all hazards along such paths. The user must identify the required range of mobility in each hazard zone and note the location and distance to all obstructions in potential fall paths. Lateral obstructions which could be contacted in a pendular fall arrest must be noted. An assembly connecting a harness to an anchorage must be selected which will satisfactorily limit total fall distance and allow for dynamic elongation and activation distance of the assembly. If the Carabiner is to

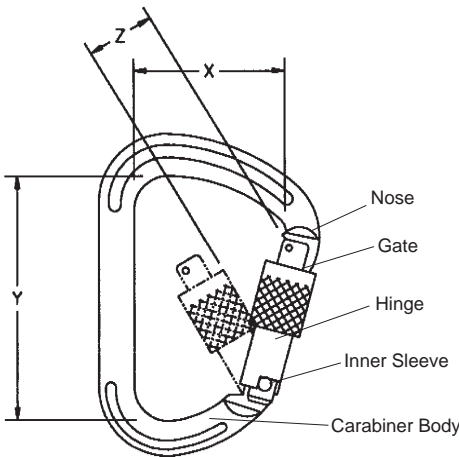
be used for confined space entry operations, the workplace assessment must comply with the requirements of OSHA regulation 29 CFR 1910.146 and ANSI Z117.1.

4.0 DESCRIPTION OF MSA CARABINER

The MSA Carabiner is a connector component comprised of a trapezoid or oval shaped body with a normally closed gate which may be opened to permit the connector body to receive an object and, when released, automatically closes to retain the object and locks. MSA Carabiners remain closed and locked until intentionally unlocked and opened for connection or disconnection. The intended purpose of each of the MSA Carabiner is given in section 4.1

4.1 CARABINER COMPONENTS

4.1.1 MODEL NO. 506259



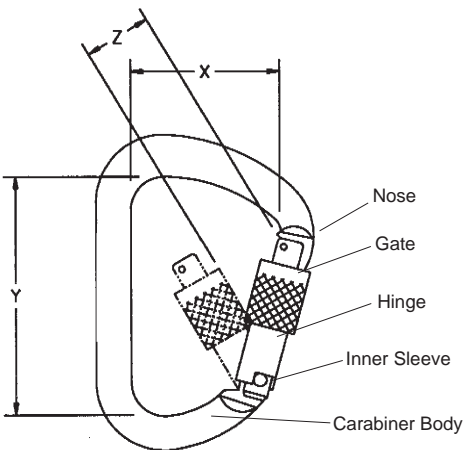
Dimensions

Width (X) = 2.0 in (51 mm)

Length (Y) = 3.7 in (93 mm)

Maximum Gate Opening (Z) = 0.9 in (23 mm)

4.1.2 MODEL NO. 506572



Dimensions

Width (X) = 2.0 in (51 mm)

Length (Y) = 4.0 in (102 mm)

Maximum Gate Opening (Z) = 0.9 in (23 mm)

4.1.3 MODEL NO. 506308

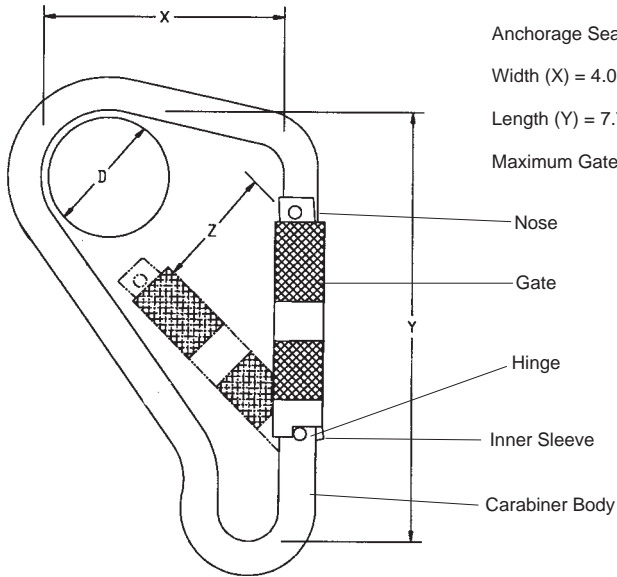
Dimensions:

Anchorage Seat Diameter (D) = 2.0 in (51 mm)

Width (X) = 4.0 in (51 mm)

Length (Y) = 7.7 in (195 mm)

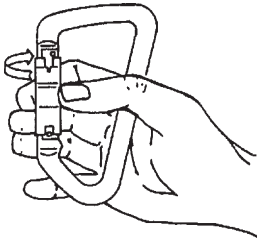
Maximum Gate Opening (Z) = 2.0 in (51 mm)



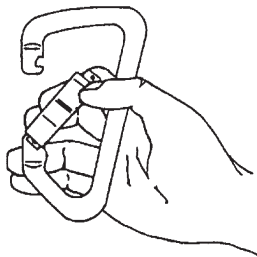
4.2 CARABINER OPERATION

4.2.1 TO UNLOCK AND OPEN GATE:

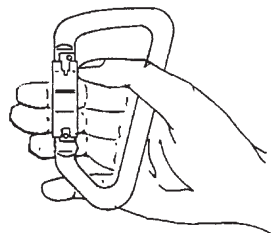
(a) Rotate gate 90 degrees about its axis (unlock)



(b) Depress gate until it pivots about the hinge (open).



(c) Release gate and it should swing back and contact nose.



Gate should rotate 90 degrees and engage nose (lock).

5.0 CARABINER SELECTION AND APPLICATION

5.1 PURPOSE OF MSA CARABINER

The Carabiner is primarily a component of a personal fall arrest system, serving as an anchorage connector. It may also be used for work positioning, travel restriction, rescue, retrieval, evacuation and confined space entry/exit operations, depending on the associated system components used together with the Carabiner.

Use of the Carabiner must comply with these User Instructions and, further, is subject to approval under the user's safety rules and regulations and by the user's safety director, supervisor, or a qualified safety engineer. Be certain the selection of an Carabiner is suited for the intended use and work environment. If there is any conflict between these User Instructions and other directives or procedures of the user's organization, do not use the Carabiner until such conflicts are resolved. Consult all local, state, and federal Occupational Health and Safety Administration (OSHA) requirements for personal safety equipment. Also refer to the latest revision of ANSI Z359.1 and ANSI A10.14 standards for more information on Carabiner and associated system components. In Canada, refer to provincial and federal regulations.

5.2 SIZING

The size of the MSA Carabiner chosen is dependent on the specific work application being performed. Consideration must be given to the compatibility of hardware components to minimize the potential for accidental disengagement ("rollout"). Contact MSA if there is any question as to proper sizing. The following sizing limitations apply to MSA Carabiners:

- Models 506259 and 506572 are not to be used with attachment elements smaller than 1.5 in (38 mm) Inside Diameter (ID).
- Model 506308 is not to be used with attachment elements smaller than 3.62 in (92 mm) Inside Diameter (ID). This Carabiner's anchorage seat is designed to accommodate anchorages up to 2.0 in (51 mm) diameter.

Select a Carabiner of a size sufficient to close completely and lock around the object to which it is connected.

5.3 USAGE LIMITATIONS

The following applications limitations must be considered and planned for before using the MSA Carabiner:

5.3.1 PHYSICAL LIMITATIONS

The Carabiner is designed for use by one person with a combined total weight no greater than 310 lbs (140 kg), including clothing, tools, and other user-borne objects.

5.3.2 CHEMICAL HAZARDS

Acidic, alkaline, or other environments with harsh substances may damage the hardware of the Carabiner. If working in a chemically aggressive environment, consult MSA to determine which Carabiner material is better for your specific conditions. When working in the presence of chemicals, more frequent inspection of the Carabiner is required.

5.3.3 HEAT

Do not use Carabiner in environments with temperatures greater than 185° F (85° C). Protect the Carabiner when used near welding, metal cutting, or other heat producing activities.

5.3.4 CORROSION

Do not expose the Carabiner to corrosive environments for prolonged periods. Organic substances and salt water are particularly corrosive to metal parts. When working in corrosive environments, more frequent inspection, cleaning and drying of the Carabiner is required. See sections 9, 11 and 12 for cleaning and inspection details.

5.3.5 ELECTRICAL HAZARDS

Use extreme caution when working near energized electrical sources. Metal hardware will conduct electric current. Maintain a safe working distance {preferably at least 10 ft (3 m)} from electrical hazards.

5.3.6 MOVING MACHINERY

When working near moving machinery parts (e.g. conveyors, rotating shafts, presses, etc.), maintain a safe working distance from machinery which could entangle clothing or personal protective equipment.

5.3.7 SHARP EDGES AND ABRASIVE SURFACES

When work around sharp edges and abrasive surfaces is unavoidable, use heavy padding or other protective barriers to prevent direct contact.

5.3.8 WEAR AND DETERIORATION

Any Carabiner which shows signs of excessive wear or deterioration must be removed from use and marked “UNUSABLE” until destroyed. See sections 11 and 12 for detailed inspection procedures.

5.3.9 IMPACT FORCES

Any Carabiner which has been subjected to the forces of arresting a fall must be immediately removed from service and marked as “UNUSABLE” until destroyed.

6.0 SYSTEMS REQUIREMENTS

The Carabiner is one component of multi-component systems. Without the other necessary components, the Carabiner serves no useful purpose. There are several different types of systems for use at heights and in confined spaces.

6.1 SYSTEM TYPES

Systems are classified according to their intended purposes. There are six classifications of systems which may be used individually or in combinations. The six basic systems classifications are:

- Fall Arrest
- Personnel-riding
- Evacuation
- Climbing protection
- Restraint
- Rescue

6.1.1 FALL ARREST SYSTEMS

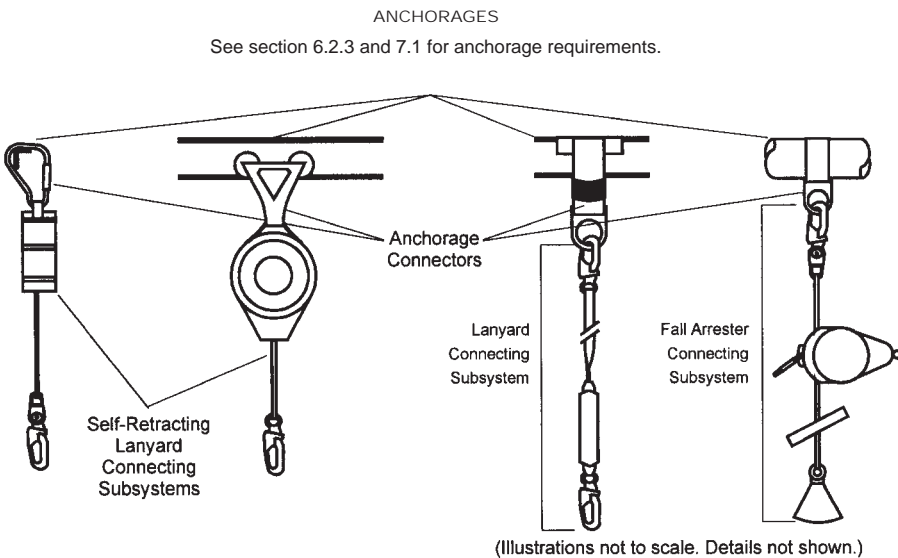
A fall arrest system is an assembly of components and subsystems, including the necessary connectors, used to arrest the user in a fall from a working height and suspend the user until rescue can be effected. A fall arrest system must always include a harness and connecting means between the harness and an anchorage or anchorage connector. Such connecting means may consist of a lanyard, energy (shock) absorber, fall arrester (rope grab), lifeline, self-retracting lanyard or suitable combinations of these.

6.1.1.1 LANYARD CONNECTING SUBSYSTEM

The term applied to an assembly, including the necessary connectors, which is comprised of a lanyard and a shock absorber. The lanyard and shock absorber are usually permanently coupled together along with self-locking snaphooks at each end. The subsystem is attached between the fall arrest attachment (back D-ring) of the harness and an anchorage or anchorage connector. Only models 506308 and 506572 may be incorporated in lanyard connecting subsystems intended for use in fall arrest systems.

6.1.1.2 FALL ARRESTER CONNECTING SUBSYSTEM

The term applied to an assembly, including the necessary connectors, which is comprised of a fall arrester (rope grab) and a vertical lifeline. Sometimes a lanyard or lanyard with integral shock absorber, including the necessary connectors, is connected to the rope grab. The vertical lifeline must have a lifeline tensioner (counterweight), a connector for anchoring it, and may have a shock absorber. The subsystem is attached between the fall arrest attachment (back D-ring) of the harness and an anchorage or anchorage connector. Fall arrester connecting subsystems are sometimes suitable for use in climbing protection systems. See section 6.1.2. MSA Carabiners identified in Table 1 are suitable for use in fall arrester connecting subsystems.



6.1.1.3 SELF-RETRACTING LANYARD CONNECTING SUBSYSTEM

The term applied to an assembly, including the necessary connectors, comprised of a self-retracting lanyard only or a self-retracting lanyard and added shock absorber at the point of attachment to the user's harness. The subsystem is attached between the fall arrest attachment (back D-ring) of the harness and an anchorage or anchorage connector. These subsystems are sometimes suitable for use in climbing protection systems. See section 6.1.2. The MSA Carabiners, models 506572 and 506308, are suitable for use in self-retracting lanyard connecting subsystems.

6.1.2 CLIMBING PROTECTION SYSTEMS

A climbing protection system is an assembly of components and subsystems, including the necessary connectors, used to arrest the user in a fall from a working height and suspend the user until rescue can be effected. Such systems are used for climbing ladders and structures that are designed for climbing. They may either be temporary (portable) or permanent. Temporary climbing protection systems are described in sections 6.1.1.2 and 6.1.1.3. Permanent climbing protection systems are ones of the rigid rail type such as the MSA Dyna-Glide® systems. In those systems, a rigid rail is permanently attached to the structure to be climbed. A fall arrester device is attached to and glides on the rail to permit ascent and descent. It quickly locks in case of a fall. The Dyna-Glide fall arrester is attached between the front attachment (chest D-ring) of a MSA Pullover harness and the fall arrester by use of a carabiner. Contact MSA for more information about Dyna-Glide climbing protection systems. The MSA Carabiners, models 506259 and 506572, are suitable for use in conjunction with and connected to the fall arrester of a permanent climbing protection system.

6.1.3 RESTRAINT SYSTEMS

A restraint system is an assembly of components and subsystems, including the necessary connectors, used to:

- (a) stabilize and partially support the user at an elevated work location and allow free use of both hands. This type of restraint system is referred to as a work positioning system or, simply, a positioning system.
- (b) restrict the user's motion so as to prevent reaching a location where a fall hazard exists. This type of system is referred to as a travel restriction system.

A positioning system includes a harness and connecting means between the harness and an anchorage or anchorage connector. Such connecting means usually consists of a positioning lanyard which is connected to both hip D-rings and wraps around or connects to an anchorage or anchorage connector. A positioning system must always be backed up by a fall arrest system. A travel restriction system consists of a harness and a fixed-length or adjustable-length lanyard connected between any one of the harness D-rings and an anchorage or anchorage connector. The MSA Carabiners described by these instructions are suitable for use in restraint systems.

6.1.4 PERSONNEL-RIDING SYSTEMS

A personnel-riding system is an assembly of components and subsystems, including the necessary connectors, used for lifting and lowering a worker to and from a work station which is not

accessible by other preferred means, and potentially for positioning the worker while at that work station. Personnel-riding systems are of two general types, namely: (a) the mobile supported aerial platform type (e.g. manually- and self-propelled platforms and vehicle-mounted platforms), and (b) suspended personnel hoisting type (e.g. suspended scaffolds, suspension seats, and suspension harnesses). A harness must be used in both of these different systems; however, the way it is used will differ. When working on mobile supported aerial platforms, the user should use a restraint system (see section 6.1.3) anchored to the platform to provide restraint against falling from the platform. When working with the suspended personnel hoisting type of system, the user must employ a fall arrest system of either the self-retracting lanyard type or the fall arrester (rope grab) type. It is permissible to use a harness as a suspension harness for making access to the work station if the access time is of very short duration and the use of a suspension seat is not possible. Do not use a harness for fully suspended work positioning. Contact MSA for separate instructions on the associated equipment used in personnel-riding systems. The MSA Carabiners identified in Table 1 are suitable for use in personnel-riding systems.

6.1.5 RESCUE SYSTEMS

A rescue system is an assembly of components and subsystems, including the necessary connectors, used for moving an incapacitated or isolated person from a hazardous place to a safe place under alert or emergency conditions. An isolated person is one who has no available means of access to a safe place or is physically stranded or trapped. Rescue systems require actions of specially trained rescuers to effect the rescue of the incapacitated or isolated person. When rescuing a person who is wearing a harness, it is generally best to connect the rescue line to the chest D-ring. Alternatively, it is acceptable (but less desirable) to connect the rescue line to both of the shoulder D-rings using a “Y” retrieval lanyard. If the harness being used by the person being rescued has neither a chest D-ring nor shoulder D-rings, the back D-ring may be used as a last resort to connect the rescue line. MSA strongly recommends that the user select a harness with a chest D-ring to provide for rescue. The MSA Carabiners identified in Table 1 are suitable for use in rescue applications.

6.1.6 EVACUATION SYSTEMS

An evacuation system is an assembly of components and subsystems, including the necessary connectors, employed by the user to move, unassisted by others, from a hazardous place to a safe place under alert or emergency conditions. An evacuation system consists of a harness and connecting means between the harness and an anchorage or anchorage connector. Such connecting means may consist of: (a) the MSA Dynescape® Automatic Descender, (b) the MSA Dynescape® Manual Descender, or (c) the MSA Fallblocc® System. See the separate instructions for this equipment. The MSA Carabiners identified in Table 1 are suitable for use in evacuation systems.

6.1.7 COMBINATIONS OF SYSTEMS

Systems for fall arrest, restraint, climbing protection, personnel-riding, rescue and evacuation are often used in combination. For example, positioning type restraint systems must be backed up by a separate and independent fall arrest system. MSA harnesses have the the necessary versatility to permit this. Hands-on training is required to obtain the necessary information and skills needed to work with combinations of systems. Refer to the separate instructions accompanying the several components and subsystems necessary to make up these systems.

6.2 COMPATIBILITY OF SYSTEM PARTS

6.2.1 COMPATIBILITY OF COMPONENTS AND SUBSYSTEMS

MSA Carabiners are designed to be used with MSA approved components and connecting subsystems. Use of the Carabiner with products made by others that are not approved in writing by MSA may adversely affect the functional compatibility between system parts and the safety and reliability of the complete system. Connecting subsystems must be suitable for use in the application (e.g. fall arrest, climbing protection, restraint, rescue or evacuation). MSA produces a complete line of connecting subsystems for each application. Contact MSA for further information. Refer to the manufacturer's instructions supplied with the component or connecting subsystem to determine suitability. For fall arrest applications using MSA harnesses, the maximum fall arrest force must not exceed 1,800 lbf (8 kN). Contact MSA with any questions regarding compatibility of equipment used with the MSA Carabiners.

6.2.2 COMPATIBILITY OF CONNECTORS

Connectors, such as D-rings, snaphooks, and carabiners, must be rated at 5,000 lbf (22 kN) minimum breaking strength. MSA connectors meet this requirement. Connecting hardware must be compatible in size, shape, and strength. Non-compatible connectors may accidentally disengage ("rollout"). Always verify that the connecting snaphook or carabiner and the D-ring on the harness or anchorage connector are compatible. Use only self-closing, self-locking snaphooks and carabiners (as defined and required by ANSI Z359.1).

6.2.3 ANCHORAGES AND ANCHORAGE CONNECTORS

Anchorage for personal fall arrest systems must have a strength capable of supporting a static load, applied in directions permitted by the system, of at least: (a) 3,600 lbf (16 kN) when certification exists, or (b) 5,000 lbf (22.2 kN) in the absence of certification. See ANSI Z359.1 for definition of certification. When more than one personal fall arrest system is attached to an anchorage, the anchorage strengths set forth in (a) and (b) must be multiplied by the number of systems attached to the anchorage. See ANSI Z359.1, section 7.2.3. This requirement is consistent with OSHA requirements under 20 CFR 1910, Subpart F, Section 1910.66, Appendix C. In addition, it is recommended that the user of personal fall arrest systems refer to ANSI Z359.1, Section 7, for important considerations in equipment selection, rigging, use, and training.

7.0 PLANNING THE USE OF SYSTEMS

Perform the hazard identification and evaluation described in section 3 of these instructions. Then plan the system(s) before starting work. Consider all possible paths of user movement and all factors that could affect the user's safety before, during, and after a fall anywhere along these paths. A qualified person must select the components, materials, anchorage and anchorage connectors to match the system application, the work, workplace hazards, and the environment. Consider the following points when planning the system(s).

7.1 ANCHORAGE AND ANCHORAGE CONNECTOR SELECTION

Determine the necessary locations of anchorages to assure that the user will be continuously

connected when exposed to hazards of falling. Select anchorages that are stable and have the strength required by section 6.2.3 of these instructions. Carefully select the locations of the anchorages to: (a) reduce possible free fall distance, (b) prevent swing fall hazards, and (c) provide clear space in the potential fall paths to avoid striking an object. Do not select anchorage locations that will require the user to work above them as this will increase the potential free fall and total fall distances. Plan the types of anchorage connectors that will need to be selected and refer to these instructions.

7.2 FREE FALL DISTANCE, TOTAL FALL DISTANCE & SYSTEM ELONGATION

Personal fall arrest systems must be selected and rigged to ensure that potential free fall distances will never exceed 6 ft (1.8 m) as required by OSHA and ANSI Z359.1. [In Canada, free fall distance is limited to 5 ft (1.5 m) by regulation. ANSI A10.14 also restricts free fall distance to 5 ft (1.5 m).] See separate instructions for connecting subsystems to determine the deceleration distance and dynamic elongation which must be allowed for in the space of potential fall paths. Total fall distance is the sum of free fall distance and deceleration distance. Dynamic elongation of the system (temporary elastic stretch of connecting components and subsystems) must be added to total fall distance and clearance allowed.

7.3 USER MOVEMENTS

Identify all necessary movements of the user and the materials and equipment needed to perform the planned work. Plan for avoidance of the crossing or tangling of connecting subsystems of two or more workers. Anticipate user movements that might introduce hazards of the connecting subsystem passing under, about or between body parts or invite the user to clamp, knot or otherwise prevent the connecting subsystem from functioning properly. Establish controls to prevent these occurrences.

7.4 PENDULUM (SWING) FALLS

Swing falls can occur when the system is not anchored directly above the user. The force of striking an object in a pendular motion can cause serious injury. Always minimize swing falls by working as directly below the anchorage point as possible.

7.5 CLEAR SPACE IN FALL PATH

Make certain that enough clearance is available in all potential fall paths to prevent striking an object. The amount of clearance needed depends upon the type of connecting subsystem used, and the location of the anchorage. Consult the manufacturer's instructions for the particular connecting subsystem or component for clearance needed.

7.6 HAZARDS IDENTIFIED IN WORKPLACE ASSESSMENT

All hazards of the type set forth in section 3 of these instructions must be addressed and suitable controls planned and implemented. For example, if work must be performed near unavoidable sharp edges, plan to protect against cutting by use of heavy padding or other means of covering the sharp edge.

7.7 RESCUE AND EVACUATION

The user must have a rescue plan and the means at hand to implement it. The plan must take into account the equipment and special training necessary to effect prompt rescue under all

foreseeable conditions. If the rescue be from a confined space, the provisions of OSHA regulation 1910.146 and ANSI Z117.1 must be taken into account. Although a rescue plan and the means to implement it must always be in place, it is a good idea to provide means for evacuation without assistance of others. This will usually reduce the time to get to a safe place and reduce or prevent the risk to rescuers.

8.0 USAGE

8.1 CARABINER INSPECTION BEFORE EACH USE

Inspect the Carabiner to verify that it is in serviceable condition. See section 11 for inspection details. Do not use Carabiner if inspection reveals an unsafe condition.

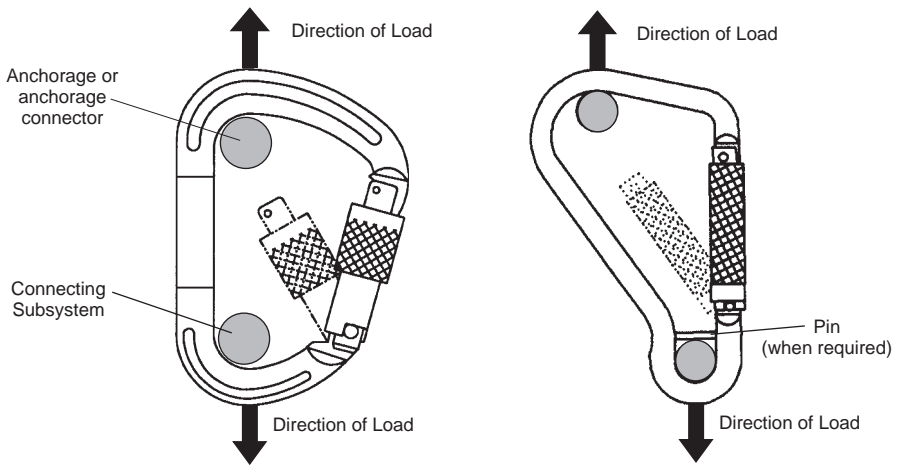
8.2 MAKING PROPER CONNECTIONS:

8.2.1 MAKING CONNECTIONS

When using a snaphook or carabiner to connect to an anchorage or when coupling components of the system together, be certain accidental disengagement ("rollout") cannot occur. Rollout is possible when interference between a carabiner and the mating connector causes the carabiner's gate or keeper to accidentally open and release. Rollout occurs when a carabiner is snapped into an undersized ring such as an eye bolt or other non-compatibly shaped connector. Only self closing, self-locking snaphooks and carabiners should be used to reduce the possibility of rollout when making connections. Do not use snaphooks or connectors that will not completely close over the attachment object. Do not make knots in a lanyard. Do not hook a lanyard back onto itself. Snaphooks and carabiners must not be connected to each other. Do not attach two snaphooks or carabiners into one D-ring. Do not attach snaphooks or carabiners directly to a horizontal lifeline. Always follow the manufacturer's instructions supplied with each system component.

8.2.2 PROPER ALIGNMENT OF THE CARABINER UNDER LOAD

The carabiner must be installed so that the loads are applied in the area designed for greatest strength, as shown in the illustration below. Select the appropriate size carabiner for the anchorage available. The anchorage or anchorage connector should be seated in the radius of the carabiner opposite the gate. Do not apply loads across the gate.



8.3 INSTALLATION

When required, a dowel pin, supplied with P/N 506308, may be installed by inserting the pin through the existing hole using a punch and hammer to properly seat the pin firmly in the carabiner.

CAUTION

Do not install carabiner P/N 506308, in a manner that applies a load to the pin.

9.0 CARE, MAINTENANCE AND STORAGE

9.1 CLEANING INSTRUCTIONS

Clean the Carabiner with a lightly oiled cloth. Excessive accumulation of dirt, paint or other foreign matter may prevent proper function of the Carabiner. Questions concerning the condition of your Carabiner, or have any doubt about putting it into service, consult a qualified safety engineer or contact MSA.

9.2 MAINTENANCE AND SERVICE

Equipment which is damaged or in need of scheduled maintenance must be tagged as “UNUSABLE” and removed from service. Corrective maintenance (other than cleaning) and repair, such as replacement of elements, must be performed by a authorized service center. Authorization to perform this work must be in writing. Do not attempt field service of the Carabiner. See section 11.1 for inspection and service frequency. Periodically lubricate the area about the hinge and inner sleeve (on both sides of the Carabiner) with a light-weight penetrant oil.

9.3 STORAGE

Store the Carabiner in a cool, dry and clean place out of direct sunlight. Avoid areas where heat, moisture, light, oil, and chemicals or their vapors or other degrading elements may be present. Equipment which is damaged or in need of scheduled maintenance should not be stored in the same area as usable equipment. Heavily soiled, wet, or otherwise contaminated equipment should be properly maintained (e.g. dried and cleaned) prior to storage. Prior to using equipment which has been stored for long periods of time, a Formal Inspection should be performed by a competent person.

10.0 INSPECTION BEFORE EACH USE

10.1 INSPECTION FREQUENCY

The Carabiner must be inspected by the user before each use and, additionally, by a competent person other than the user at intervals of no more than six months. The competent person inspection is referred to as Formal Inspection. MSA recommends that the Carabiner be formally inspected by a competent person other than the user at least every six months. See section 12 for Formal Inspection procedures.

 CAUTION

If the Carabiner has been subjected to fall arrest or impact forces, it must be immediately removed from service. The frequency of inspection by a competent person should be established by the user's organization based on such factors as the nature and severity of workplace conditions, modes of use, and exposure time of the equipment.

10.2 INSPECTION STEPS

- Step 1: Inspect for missing or altered parts. Refer to the Carabiner Inspection Diagram and verify each item is present and has not been tampered with.
- Step 2: Inspect the entire Carabiner for any cracks, nicks or breaks in the metal. Inspect every inch of the Carabiner. Clean if necessary before inspection in order to detect small, hairline cracks.
- Step 3: Inspect the Carabiner for deformation. Look for bent or dented parts. Open the gate and inspect the nose of the Carabiner for signs of wear, distortion or breaks.
- Step 4: Inspect the Carabiner surface for signs of corrosion. On steel Carabiners, red dust is evidence of corrosion of the basis metal. Corrosion of aluminum Carabiners is evident by pitting or scale.
- Step 5: Inspect for heat damage, usually evident as a darkened discoloration of the metal surfaces.
- Step 6: Inspect the Carabiner function. The Carabiner must:
- Rotate and open easily
 - Open completely
 - Close and lock when released
- The Carabiner gate must not open under pressure from any direction unless unlocked. Periodically lubricate the Carabiner as described in section 9.2 of this manual to maintain proper function.
- Step 7: Inspect each fall arrest system component or subsystem per associated manufacturer's instruction.
- Step 8: Record the Carabiner inspection date and results. Refer to the Formal Inspection Log in section 12 of this manual.

 CAUTION

Remove a defective Carabiner from service immediately and label "UNUSABLE" until repaired or destroyed.

10.3 CORRECTIVE ACTION

When inspection reveals defects, damage, or signs of inadequate maintenance, the Carabiner must be permanently removed from service or undergo corrective maintenance by a factory authorized service center before return to service.

 CAUTION

Only MSA or parties authorized in writing may make repairs to this equipment.

11.0 FORMAL INSPECTION

11.1 FORMAL INSPECTION FREQUENCY

The Carabiner must be formally inspected by a competent person other than the user at intervals of no more than six months. (The qualifications of a competent person are established by OSHA.) If the product is exposed to severe working conditions, more frequent formal inspections may be required. The frequency of inspection by a competent person should be established by the user's organization based on such factors as the nature and severity of workplace conditions, modes of use, and exposure time of the equipment. The competent person should perform a methodical and thorough visual and tactile inspection by following the inspection procedure in section 12.3. The inspection results should be recorded in the Formal Inspection Log and retained for reference.

11.2 CONTROL OF EQUIPMENT

The user's organization should establish and enforce a policy and procedure whereby any Carabiner that is found to be defective, damaged, or in need of maintenance be immediately removed from use, marked as "UNUSABLE" and immediately thereafter submitted to custody of the competent person responsible for Formal Inspection. This has the benefits that: 1) defective equipment is secured from further use until proper action is taken; 2) uniform standards are applied for determining whether the equipment is acceptable or not acceptable for further use; 3) uniform methods of cleaning and other maintenance are applied; and 4) there is a central point for evaluation of conditions that may be recurring and require preventive measures such as coordination with the equipment manufacturer, selection of alternate equipment, additional training of equipment users, or changes to the workplace conditions.

11.3 FORMAL INSPECTION PROCEDURE

The Formal Inspection Procedure is similar to the user's inspection before each use described in section 11. However, it differs in three important respects, namely: 1) it is performed by a competent person other than the user who is trained and authorized to perform Formal Inspection for the user's organization; 2) it is more detailed and is methodically recorded on a Formal Inspection Log that is kept on file for future reference; and 3) it results in final disposition of the equipment as either "acceptable" or as "not acceptable" followed by destruction of the product.

There are three forms that are important to the Formal Inspection Procedure. They are the Formal Inspection Diagram ("DIAGRAM"), the Formal Inspection Log ("LOG"), and the Formal Inspection Checklist and Codes ("CHECKLIST"). These forms relate and refer to each other so it is necessary to understand their purposes and uses before discussing the inspection procedure.

11.3.1 DIAGRAM

This is a set of line drawings of the Anchorage Connector Strap. Each has numbered callouts of the parts. The numbers called out in the DIAGRAM correspond to those shown on the column titled "INSP. POINT" (inspection point) on the LOG.

11.3.2 LOG

This is the form to be used to record observations made during the Formal Inspection. The Model No., Serial No. and Date Made are recorded by the inspector from the label set. The formal inspector's name and the inspection date are entered by the inspector. The "Disposition"

entry is the last entry made on this form after all observations have been recorded. The entry is either "Acceptable" ("PASS") or "Not Acceptable" ("FAIL"). The columns on the LOG are as follows:

INSP. POINT

Inspection point. The Carabiner part designated in the callouts on the DIAGRAM.

DESCRIPTION

Name of the Carabiner inspection point.

QTY/ACS

Quantity per Carabiner. The quantity of each Carabiner inspection point that must be inspected. Note that the quantity of certain items will vary between models and that some items are not present on all models.

COND.

Condition. The condition of the Carabiner part is indicated here by entry of the appropriate Condition Code shown on the CHECKLIST (e.g. M0, P2, etc.). Alternatively, the inspector may simply enter "FAIL" if a defective condition exists and make no entry if no defect exists.

OVERALL ASSESS.

Overall assessment. The inspector's evaluation of the overall acceptability or non-acceptability of the part category. The appropriate Overall Assessment Code defined on the CHECKLIST is entered here (e.g. MA, PN, etc.). Alternatively, the inspector may simply enter "FAIL" if a defective condition exists and make no entry if no defect exists.

COMMENTS

Indicate pertinent inspector observations here.

11.3.3 CHECKLIST AND CODES

This is a table which categorizes the different types of Carabiner parts into broad categories (e.g. metallic or plastic). For each of these categories that are applicable to a specific product, the formal inspector checks the Carabiner parts for each of the associated conditions (e.g. deformation, corrosion, etc.). The codes for the detected conditions are entered in the Condition column on the LOG (e.g. M1, P0, etc.). Overall assessment codes are given, along with the criteria for assigning them, so the inspector can decide if the Carabiner is acceptable or not acceptable for further use (e.g. MA, MN, PA, PN). Alternatively, instead of using these codes, the inspector may simply enter "FAIL" if a defective condition exists and make no entry if no defect exists.

11.3.4 FORMAL INSPECTION PROCEDURAL STEPS

Step 1: Record on the LOG the Model No., Serial No. and Date Made information shown on the product label set. Record the inspector's name and inspection date.

Step 2: Arrange the Carabiner so the parts to be inspected are readily visible.

- Step 3: Starting with the parts shown on the LOG, inspect each part (inspection point) one at a time. Refer to the DIAGRAM for identification of each inspection point. Each part must be inspected for the possible presence of the conditions shown on the CHECKLIST. Enter in the Condition column on the LOG the proper Condition Code (listed on the CHECKLIST) or "FAIL" if a defect exists. If there is any question whether the product condition has materially changed since the last Formal Inspection, retrieve and review the prior Formal Inspection records for the specific product.
- Step 4: Determine whether the part (inspection point) is acceptable or not acceptable. If an inspection point has a defective condition, enter in the Overall Assessment column of the LOG the proper code taken from the CHECKLIST or simply "FAIL."
- Step 5: Determine disposition of the Carabiner. If in step 4 it has been determined that the Carabiner is not acceptable, enter "N" or "FAIL" in the Disposition space on the LOG. In addition, a notation should be made in this space as to whether the Anchorage Connector Strap is to be destroyed, returned to manufacturer/distributor, etc.
- Step 6: If in step 4 it has been determined that the Carabiner is acceptable for further use, enter "A" or "PASS" in the Disposition space on the LOG.
- Step 7: File the LOG for future reference.

11.4 FORMAL INSPECTION CHECKLIST AND CODES

Type of Part Inspected	Condition	Cond. Code	Overall Assessment Code
Metallic	Deformed/fractured	M1	
	Corroded/deep pits	M2	
	Missing/loose	M3	
	Heat Exposure	M4	MA - (Metallic acceptable)
	Chemical Exposure	M5	
	Burrs/sharp edges	M6	
	Cuts/deep nicks	M7	MN - (Metallic not acceptable)
	Malfunction	M8	
	Other	M9	

Legend

Disposition: A (acceptable) N (not acceptable), enter "A" (or "PASS") or "N" (or "FAIL") in disposition blank on Formal Inspection Log. Criteria for disposition of "N" (not acceptable): If there is one or more Overall Assessment Code of "N" type (ie: WN, SN, MN, PN).

12.5 FORMAL INSPECTION LOG

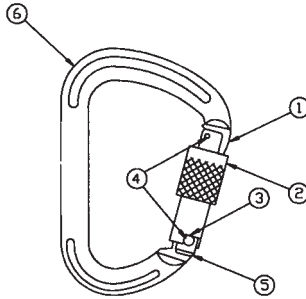
Model No. 506259 Inspector Joe Smith
 Serial No. 1234567 Inspection Date 10/31/98
 Date Made 8/98 Disposition _____

INSP. POINT	DESCRIPTION	QTY / H	PASS/FAIL COMMENTS
METALLIC PARTS			
1	Nose	1	
2	Gate	1	
3	Hinge	1	
4	Dowel Pins	2	
5	Inner Sleeve	1	
6	Carabiner Body	1	
7	Pin	1	

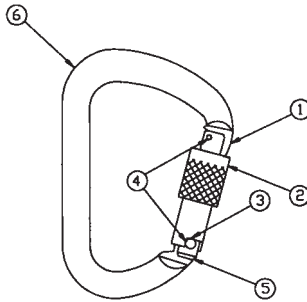
- (a) Optional simplified PASS/FAIL inspection format: Whenever an acceptable condition is found, the entry in the COND. and OVERALL ASSESS. columns may be left blank. Whenever a defective condition is found, enter "FAIL." The inspection may end upon detection of a single defective condition.
- (b) Blank copies of this LOG, with associated CHECKLIST and DIAGRAM, are available from Rose Manufacturing Company. Call Toll Free (800) 722-1231.

12.6 FORMAL INSPECTION DIAGRAM

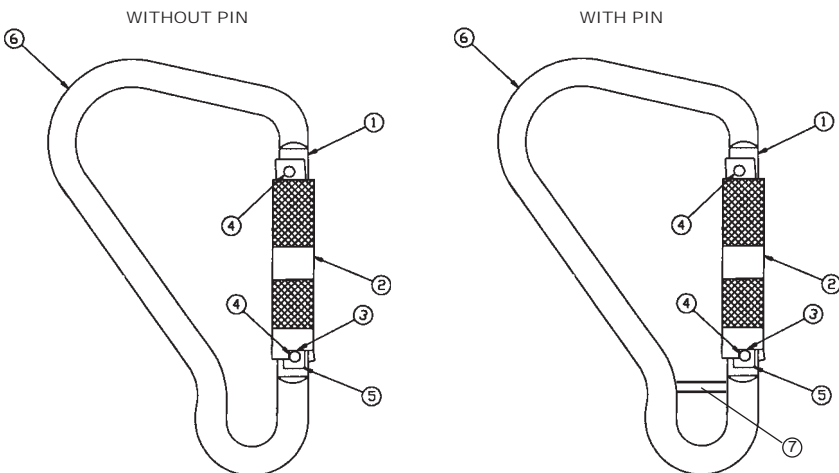
12.6.1 ALUMINUM CARABINER, MODEL 506259



12.6.2 STEEL CARABINER, MODEL 506572



12.6.3 LTW51 CARABINER, MODEL 506308



WARRANTY

Express Warranty - MSA warrants that the product furnished is free from mechanical defects or faulty workmanship for a period of one (1) year from first use or eighteen (18) months from date of shipment, whichever occurs first, provided it is maintained and used in accordance with MSA's instructions and/or recommendations. Replacement parts and repairs are warranted for ninety (90) days from the date of repair of the product or sale of the replacement part, whichever occurs first. MSA shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own authorized service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of MSA may bind MSA to any affirmation, representation or modification of the warranty concerning the goods sold under this contract. MSA makes no warranty concerning components or accessories not manufactured by MSA, but will pass on to the Purchaser all warranties of manufacturers of such components. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. MSA SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Exclusive Remedy - It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of MSA, or for any other cause of action, shall be the repair and/or replacement, at MSA's option, of any equipment or parts thereof, that after examination by MSA are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the Purchaser, F.O.B. Purchaser's named place of destination. Failure of MSA to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.

Exclusion of Consequential Damages - Purchaser specifically understands and agrees that under no circumstances will MSA be liable to Purchaser for economic, special, incidental, or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against MSA.

For additional information, please contact the Customer Service Department at 1-800-MSA-2222 (1-800-672-2222).



For More Information: Call (1-800-MSA-2222) or Visit Our Website at (www.MSAnet.com)

MSA

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