

# MSA Sure-Stop™ Shock Absorbing Lanyards

Application, Operation, Maintenance & Inspection Instructions Manual

**Please read this manual.**

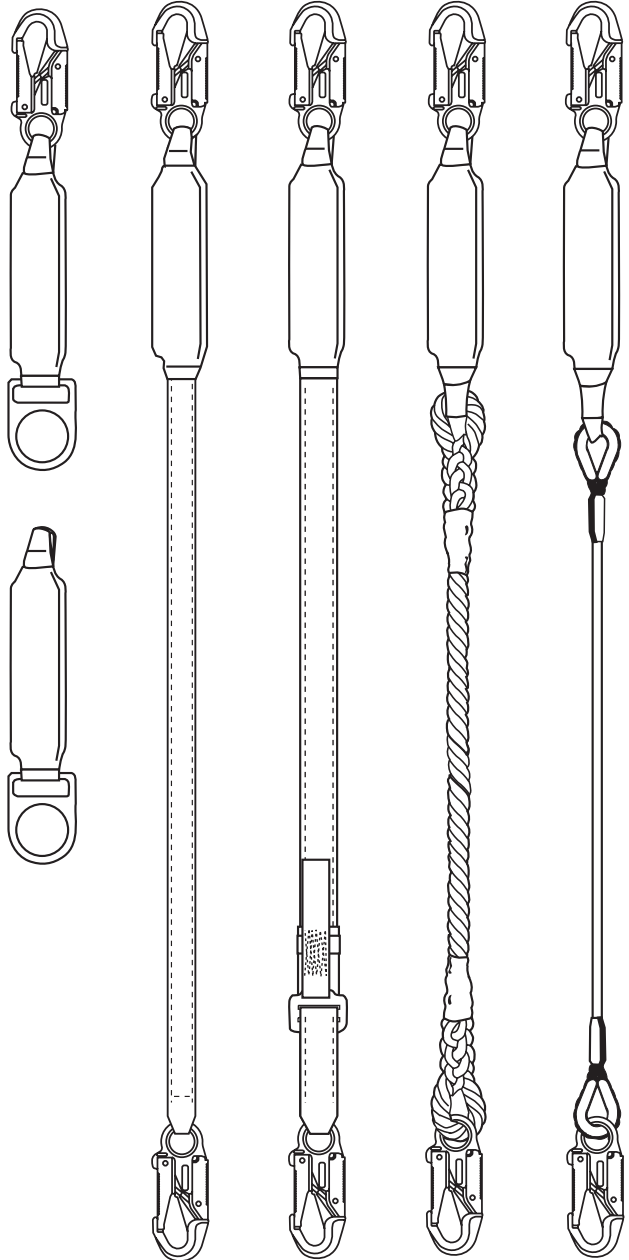
**This information is vital to your safety.**

## **WARNING**

THESE INSTRUCTIONS MUST BE PROVIDED TO THE USER. MANAGEMENT AND USER MUST READ AND UNDERSTAND THESE INSTRUCTIONS; FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

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Synthetic Strap (STR)

Synthetic Strap (STR) Adjustable

Synthetic Rope

Wire Rope (RW)

## Application

A shock absorbing lanyard connects the users body harness or waistbelt to a stationary or mobile anchorage/anchorage connector. Shock absorbing lanyards are short in length, manufactured with high quality, high tensile strength webbing, rope or steel cable, with connecting hardware fitted on the ends. Shock absorbing lanyards are available in standard and adjustable lengths. Application for shock absorbing lanyards include Fall Arrest, Work Restriction and Work Positioning.

## Function

The 4000/5000 Series is a pouch type shock absorbing device which in the event of a fall is designed to dissipate the energy of the impact by the progressive tearing of precisely engineered stitching. When using the 4000/5000 Series Shock Absorbing Device the Arrest Force of a six foot free fall will be limited to 4kn (900lb). The device also incorporates an integral passive back-up in the event that the tear webbing tears out completely. The 4000/5000 Series shock absorbing device is mandatory if the risk of injury to workers in a fall is to be reduced.

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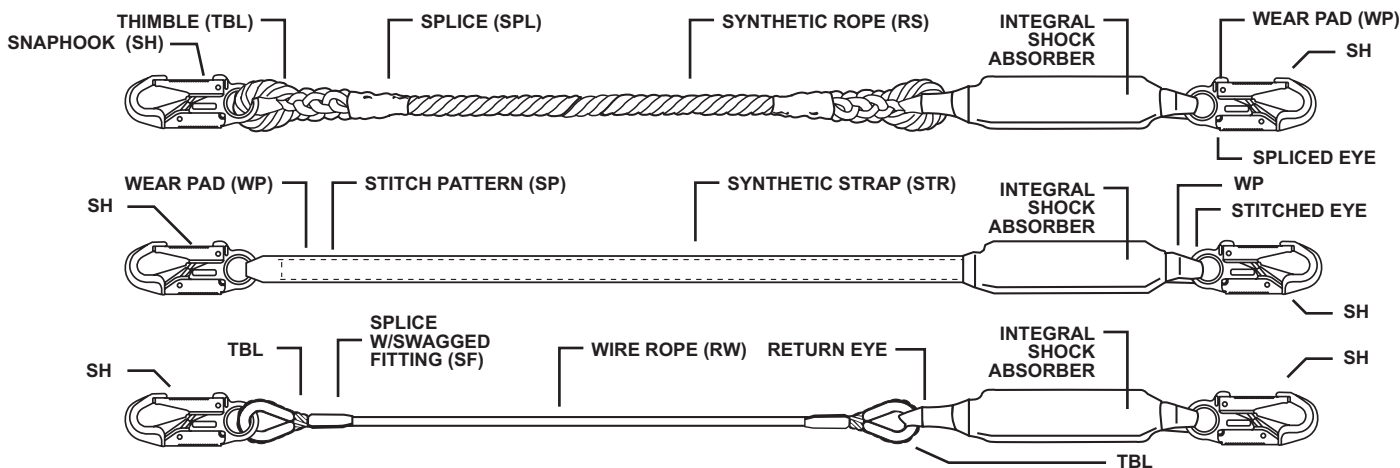


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**MSA**  
The Safety Company

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

## Name of Each Part



## Design Working Capacities/Specifications

**CAPACITY:** ONE PERSON, Design working load is 75-310 lbs (34-140.6 kg) for individual use on an approved anchorage connector/anchorage.

**MAXIMUM ELONGATION:**  
6 ft (1.8m) Free Fall: 40 in (1m)

**MAXIMUM ARRESTING FORCE:** 900 lbs (4kN)

**MAXIMUM FREE FALL DISTANCE:** 6 ft (1.8m)

**COMPLIANCE STANDARD:** ANSI Z359.1-1992  
 Z259.11-M92  
 Z259.1-95

### S/A ROPE LANYARDS

- Integral Shock Absorber (Tear Ply design)
- 5/8" (16mm) x 4' (1.2m)
- 3-strand Nylon Rope\*
- M.B.S. 8500 lbs. (37.8kN)
- 5-tuck hand splice terminations
- Forged self-locking snap hooks
- Longer lengths available
- Approx. weight: 1.6 lbs. (720g)

\* Polyester available upon request

### S/A WEB LANYARDS

- Integral Shock Absorber (Tear Ply design)
- 1 3/4" (44mm) x 4' (1.2m)
- Nylon Webbing\*
- M.B.S. 8500 lbs. (37.8kN)
- Sewn 6pt Stitch pattern terminations
- Forged self-locking snap hooks
- Longer lengths available
- Adjustable models available
- Approx weight: 1.3 lbs. (600g)

### S/A CABLE LANYARDS

- Integral Shock Absorber (Tear Ply design)
- 1/4" (6mm) x 4' (1.2m)
- Galvanized aircraft cable
- Red vinyl coated
- M.B.S. 7000 lbs. (31.3kN)
- Forged self-locking snap hooks
- Longer lengths available
- Approx. weight: 1.9 lbs. (850g)

# Operating Instructions

## Fall Arrest/Restraint

### 1a. Attachment to Full Body Harness/Waistbelts

The locking snap hook on the shock absorbing lanyard shall be attached to the forged back D-ring on an approved full body harness/waistbelt making sure visually that the gate and keeper on the hook is securely closed.

### 1b. Application of the Twin Shock Absorbing Lanyard

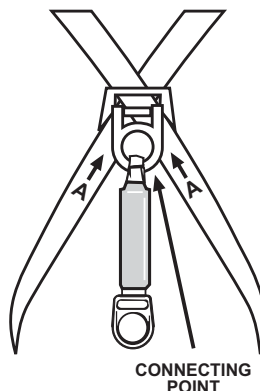
The purpose of the twin leg shock absorbing lanyard is to allow continuous connection (tie-off) while the user moves between anchorage locations. The snaphook at the center of the twin lanyard must be connected to the user's fall arrest attachment element (D-ring). The snaphooks on the ends of the lanyard legs must be connected to suitable anchorages, compatible in size, shape and strength. The user must be secured to an initial anchorage location before moving toward a second anchorage. Once in position, the user then connects the second leg of the twin lanyard to the anchorage in the user's path. Finally, the user may then disconnect from the initial anchorage to complete the movement.

**⚠ WARNING:** Connect the center-mounted snaphook to the harness back D-ring. DO NOT connect the snaphooks on the ends of the lanyard leg to your body support, as this can increase the possible free fall distance to more than 6 feet. Maintain tie-off while moving between anchorage locations. DO NOT disconnect from your initial position until you have first connected to another anchorage.

**⚠ WARNING:** Do not rely on the feel and/or sound of a snap hook when engaging it. Always check visually for proper engagement of the snap. Gate must be closed after each hook up!

### 2a. Attachment to a Personal Shock Absorber

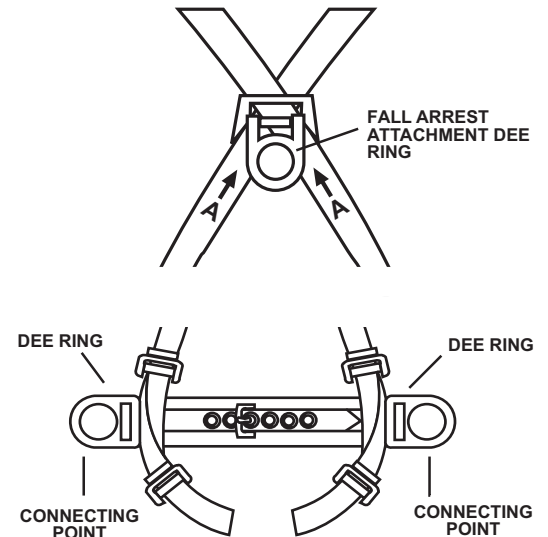
The locking snap hook on the shock absorbing lanyard shall be attached to the forged steel D-ring of the harness. Two shock absorbers should not be connected together. Excessive elongation could occur if two shock absorbers are connected.



### 2b. The Deceleration Distance

The elongation of the personal shock absorber must be taken into consideration to determine the user's total fall distance. A MSA Sure-Stop™ personal shock absorber's elongation, in the event of a 6 foot free fall may extend the original length by 40 inches (1.0m). Refer to Design Working Capacities.

**⚠ WARNING:** Ensure there is sufficient clearance below the work area taking into consideration the deceleration distance/elongation of the activated shock absorber!



### 1c. Positioning Attachment to Waistbelt a/o Waistbelt of Full Body Harness

The locking snap hook on one end of the shock absorbing lanyard shall be attached to the forged D-ring located at the side (3 o'clock position) on the waistbelt. The shock absorbing lanyard is then wrapped around the anchorage and the other locking snap hook of the shock absorbing lanyard is attached to the other side D-ring at the side (9 o'clock position) on the waistbelt.

### 3a. Attachment to Anchorage Connectors

The shock absorbing lanyard locking snap hook at the opposite end to the body holding device shall be attached securely to an approved anchorage connector. Make sure visually that the gate and keeper on the hook is securely closed.

**⚠ WARNING:** Do not rely on the feel and/or sound of a snap hook when engaging it!

3b. The location of the approved anchorage/anchorage connector must take into consideration the hazards of total fall distance and obstructions below and each side of the fall arrest area.

**⚠ WARNING:** Work directly under the approved anchorage/anchorage connector attachment point at all times, as swing falls can result in serious injury or death.

3c. Shock absorbing lanyards shall be kept as short as possible to minimize the possible free fall distance of the user. In any case, the free fall distance shall not exceed government or other applicable regulations and standards.

**⚠ WARNING:** The total fall distance of the user shall not exceed the minimum clearance on application.

## Inspection

1. The shock absorbing lanyard 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 one year. Detailed inspections must be recorded on the inspection log.
2. When inspection reveals defects in, damage to, or inadequate maintenance of shock absorbing lanyard, the shock absorbing lanyard shall be permanently removed from service or undergo adequate corrective maintenance before returning it to service.
3. Remove system from service immediately, destroy and discard shock absorbing lanyard if it does not pass this inspection and replace immediately if shock absorbing lanyard has:
  - been subjected to the forces of arresting a fall;
  - absence or illegibility of markings;
  - absence of any elements affecting the equipment form, fit or function;
  - evidence of defects in or damage to hardware elements including cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration, needed or excessive lubrication, excessive aging and excessive wear;
  - evidence of damage to shock absorbing lanyard body and/or spliced terminations including cuts, tears, abrasion, heat, burns, kinks, knots, broken strands or excessive wear;
  - alteration, absence of parts, or evidence of defects in, damage to or improper function of mechanical devices and connectors.

### VISIBLE SIGNS OF EXPOSURE DAMAGE TO POLYESTER AND NYLON SYNTHETIC MATERIAL

	Nylon	Polyester
<b>Heat</b>	Fibers become brittle, will shrivel and turn brown in color and break when flexed. Should not be used above 200°F.	Same as nylon. Should not be used above 180°F.
<b>Chemicals</b>	Fibers change color and texture similar to a brownish smudge or smear, will become less elastic with transverse cracks resulting from bending.	Same as nylon.
<b>Flame or Molten Metal</b>	Fibers strands fuse together, become hard, brittle, and shiny in appearance. Does not support combustion.	Same as nylon. Does not support combustion.
<b>Paint and Solvents</b>	Paint can penetrate into the weave and dry, causing the webbing to become hard, brittle and eventually break the fibers. Solvents and drying agents within paint cause damage similar to chemical exposure.	Same as nylon.
<b>Dirt and Grit</b>	Particles work into the weave and can cut and fray fibers.	Same as nylon.

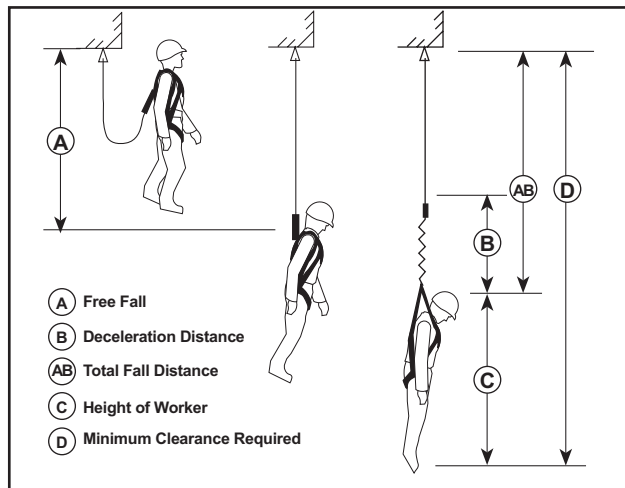
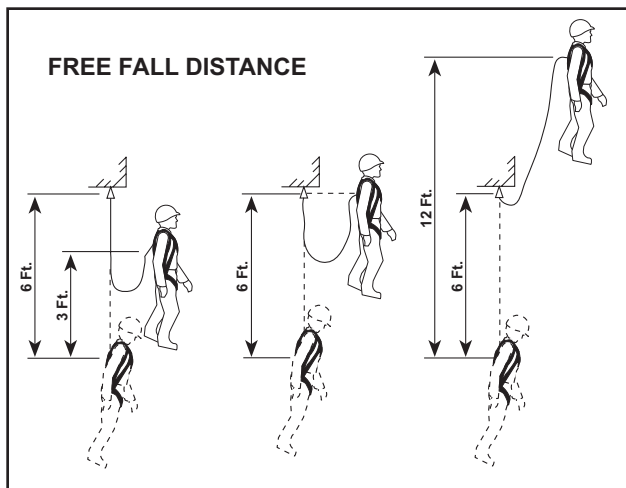
4. MSA or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment. No unauthorized repairs and/or modifications are allowed.

## Maintenance and Storage

1. Maintenance and storage of equipment shall be conducted by the user's organization in accordance with MSA instructions. Unique issues, which may arise due to conditions of use, shall be addressed with MSA.
2. Equipment which is in need of or scheduled for maintenance shall be tagged as "unusable" and removed from service.
3. To clean synthetic lanyards, wipe with a wet sponge. For more difficult to remove stains, use mild non detergent soap. DO NOT USE CHEMICALS, HARSH DETERGENTS OR PRESSURE WASHERS. Rinse off soap with clear water and hang to dry naturally.
4. All hardware should be cleaned.
5. Store in a clean, dry area free from excessive heat, steam, sunlight, harmful fumes, corrosive agents and rodents.
6. When in doubt of the operation, maintenance and inspection procedures, DO NOT USE.

## Design Statements

1. The MSA Sure-Stop™ Shock Absorbing Lanyards shall comply with government or other applicable regulations and standards.
2. All potential users of this equipment and user's management must read and understand the product instructions fully before use, failure to do so could result in serious injury or death.
3. All equipment should be used as part of a complete comprehensive engineered fall protection system. No unauthorized manufacturer's equipment should be used in the system without written approval by MSA. If the buyer chooses to disregard this warning he assumes sole responsibility for the integrity of the entire system.
4. The anchorage/anchorage connector that the shock absorbing will be attached to shall be capable of supporting 5000 lbs



5. Do not exceed free fall distance specified by applicable regulations and standards. When using a shock absorbing lanyard, keep the amount of slack between the anchorage/anchorage connector and the harness/waistbelt at an absolute minimum to reduce the free fall distance and the impact force to the user.
6. The total fall distance of the user's Fall Arrest System (FAS) shall not exceed the minimum clearance on application. Always check for obstructions below the work area to ensure your potential fall path is clear. Work directly under the anchorage/anchorage connector at all times, as swing falls can result in serious injury or death.
7. The maximum arrest force in the event of a 6 foot free fall will be limited to 900 lbs (4kn) when used according to these instructions.
8. Only one (1) person may use a given shock absorbing lanyard at one time secured to an independent anchorage/anchorage connector.

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**⚠ WARNING:** Excessive heat, open flame, molten metal are hazards which must be considered when selecting the appropriate shock absorbing lanyard. Sure-Stop™ synthetic rope or web shock absorbing lanyards are not designed for use in high temperature environments. Maximum rated service temperature is 120°F (49°C). Sure-Stop™ synthetic rope or web shock absorbing lanyards are not flame or heat resistant.

**⚠ ⚡ WARNING:** Due to the possibility of moisture absorption by the lanyard materials, we do not recommend using shock absorbing lanyards where contact with high voltage power lines may occur. Moisture absorbed by the shock absorbing lanyard may provide a path for electrical current to flow, resulting in an electrical shock or electrocution.

**⚠ ⚡ WARNING:** Do not use a steel cable shock absorbing lanyard near energized equipment or where contact with high voltage power lines may occur. The metal cable may provide a path for electrical current to flow, resulting in an electrical shock or electrocution.

**⚠ WARNING:** Do not rely on the feel and/or sound of a locking snap hook when engaging it. Always check visually for proper engagement of the locking snap hook. The locking snap hook gate must be closed after each hook up.

**⚠ WARNING:** Never reduce the length of a shock absorbing lanyard with knots. Knots can reduce the strength by 50 percent of the original strength. Never lengthen a shock absorbing lanyard by attaching two (2) shock absorbing lanyards together. Select an adjustable shock absorbing lanyard for shortening or lengthening the length.

**⚠ WARNING:** Never use shock absorbing lanyards for anything other than Fall Protection applications.

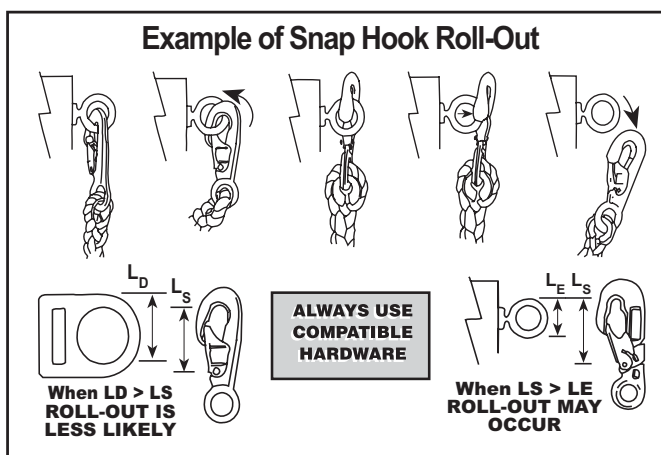
**⚠ WARNING:** To anyone who has a history of back or neck problems which could be aggravated or complicated by using this equipment should obtain medical advice before doing so.

**⚠ WARNING:** Never allow a shock absorbing lanyard to pass under or get wrapped around your legs or arms.

**⚠ WARNING:** Fall Protection products shall not be used while under the influence of drugs or alcohol.

**⚠ ⚠ WARNING:** Do not allow shock absorbing lanyards to make contact with sharp edges, sharp corners, protrusions or abrasive surfaces. A complete loss or reduction of strength of the shock absorbing lanyard may lead to serious injury or death to the user.

**⚠ WARNING:** Locking snap hooks are standard on all MSA shock absorbing lanyards. Locking snap hooks incorporate a positive locking mechanism in addition to the spring loaded gate, which will not allow the gate to open under moderate pressure without first releasing the mechanism. Such a feature properly designed will reduce the possibility of roll-out occurring.



**⚠ WARNING** Chemical hazards must be considered when selecting the appropriate shock absorbing lanyard.

	Acids	Alcohols	Aldehydes	Strong Alkalis	Bleaching Agents	Ethers	Halo-Genated Hydro-Carbons	Keytones	Oils Crudes	Oils Lubricating	Soaps & Detergents	Water & Seawater	Weak Alkalis
<b>NYLON</b>	NO	OK	OK	OK	NO	OK	OK	OK	OK	OK	OK	OK	OK
<b>POLYESTER</b>	*	OK	NO	**	OK	NO	OK	NO	OK	OK	OK	OK	OK

**NOTE:** Additional information is available regarding effects of chemicals on nylon or polyester webbing by contacting your nearest distributor.

\* Disintegrated by concentrated sulfuric acid.

\*\* Degraded by strong alkalis at elevated temperature.

# Detailed Inspection and Maintenance Log

Model Number \_\_\_\_\_ Date Purchased \_\_\_\_\_

Inspection Date	Inspection Items Noted	Corrective Action Taken	Maintenance Performed
Approved by _____			
Approved by _____			
Approved by _____			
Approved by _____			
Approved by _____			
Approved by _____			
Approved by _____			

## 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).**

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