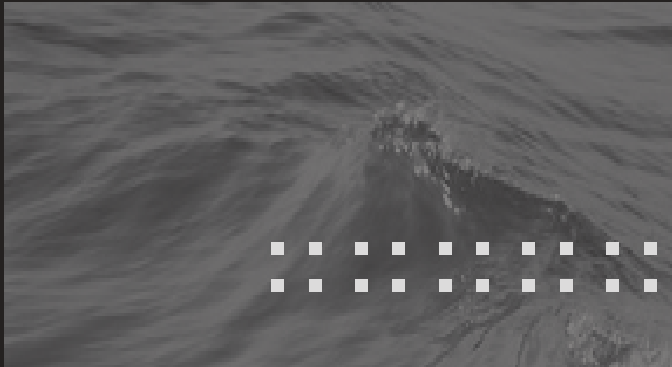


Operation Manual



ALM
ASSAULT LAUNCHER MAX

RGES
RUNNING GEAR ENTANGLEMENT SYSTEM

"The Global Leader in intrinsically safe line-throwing equipment."

Warnings

Note:

See Disclaimer, page 38, for an Important Note.

This equipment is intended to be used by professionals trained in the use of this equipment. Misuse of this equipment may cause bodily injury or death. Manufacturer disclaims all liability resulting from the use of this equipment in any manner other than that prescribed by the manufacturer.

The ALM is extremely powerful and propels a projectile at high speed. It is NOT a firearm, but the same precautions should be used. If misused, this equipment could cause serious bodily injury or death. Handle all components with the appropriate care.

DO NOT deploy the ALM directly at any person or property. When testing or training with the ALM, make sure that no persons or property are in the vicinity of the target.

The ALM requires proper training and servicing. If you are not familiar with this equipment or unwilling to follow the recommendations as outlined in this Operation Manual, then you should not operate this equipment. The user must follow recommended servicing and maintenance guidelines to ensure the long-term integrity and safety of the ALM.

Loads imposed on climbing grappling hooks should never exceed the marked rating. Any grappling hooks certified for climbing must be removed from service if any signs of damage or deformity are visible.

It is the responsibility of the purchaser of any grappling hooks certified for climbing to establish a program which provides for regular examination of each grappling hook for deformation or invisible fractures using a magnetic particle test or other similar test. Any grappling hook which shows hidden fractures as a result of such a test should be immediately removed from service. The frequency of this examination is at the discretion of the purchaser, and should be based upon the use of the grappling hook. It is the purchaser's responsibility to ensure that all grappling hooks certified for climbing are maintained in a manner which makes them suitable for their intended use.

If you are uncertain about the proper usage, care, maintenance or any other aspect of this equipment, call Rescue Solutions International, Inc. directly at 800.709.5018 or 541.540.9300 or by email at info@resqmax.com.

Service

Any service or maintenance other than items described in this manual must be performed by a technician certified by the Manufacturer to perform such work. It is the purchaser's responsibility to register the product with the Manufacturer. Failure to complete warranty registration will void the warranty. For your convenience a Service & Maintenance Record is provided on page 38 of this manual. It is the purchaser's responsibility to enter the date of purchase on the Service & Maintenance Record, and to ensure that servicing is done in accordance with the Manufacturer's recommendations. Rescue Solutions International, Inc. offers FREE technical support. Call 800.709.5018 or 541.504.9300 or email info@resqmax.com.

© 2010 Rescue Solutions International, Inc.
Phone: 541.504.9300
Fax: 541.504.9301
WWW.RESQMAX.COM

Introduction

Purpose of the ALM 5
 Applications 5
 Range 5
 Safety Features 6
 Multi-Shot Capacity 6
 Fueled by Compressed Air 6

Main Components & Accessories

ALM Launcher 7
 Line Containers 7
 Folding Stock 7
 Streamline Filler Hose Assembly 8
 ALM Tool Kit 8
 Projectiles 9
 Climbing Grappling Hook 9
 Line & Ladder Options 10
 Tactical Ladder 10
 Pelican Rigid Transport/Storage Case 10
 Kit Carry Bag 10

Filling & Storage of Projectiles

Filling the Projectiles 11
 Storing Projectiles 13

Use of Folding Stock

Using the Folding Stock 14

Attaching the Line Container

Connecting the Launcher to the Line Container 15
 Disconnecting the Launcher from the Line Container 15

Safety Assembly

Safety Push Knob 16
 Re-Setting the Safety 16

Launcher Bleed Screw

Launcher Bleed Screw Operation 17
 Reducing Pressure in a Loaded Launcher 17
 Removing a Charged Projectile without Firing 17

Valve Key	
Opening the Nozzle Valve to Pressurize the Launcher	18
Closing the Nozzle Valve in the Launcher	18
Projectiles	
Projectile Protectors	19
Projectile Damage	19
Loading Projectile in Launcher	20
Connecting the Lines	20
Preparing the Grappling Hook for Deployment	21
Preparing for Horizontal Deployment	22
Packing Payloads	
Packing the Climbing Line	23
Packing the Tactical Ladder	24
Packing RGES SF40	25
Operation	
Deploying the ALM	27
Checking Projectile Pressure	28
Removing a Charged Projectile from the Launcher	28
Non-Compliant Vessel Stopping	29
Maintenance	
Care of the Projectile(s)	30
Care of Launcher	30
Replacement of O-rings in Nozzle Valve	31
Replacement of the Nozzle Pressure Relief Assembly	32
Service	33
Frequently Asked Questions	34
Service & Maintenance Record	37
Limited Warranty	38
Disclaimer	38

Purpose of the ALM

The ALM is a new generation tactical line-throwing appliance fueled by compressed air, specifically designed to deploy a:

- line only,
- grappling hook and climbing line
- grappling hook and ascending ladder
- RGES entanglement payload

Your ALM comes completely assembled and ready for operation, except for filling with compressed air. Adequate training in all aspects of the use of this equipment is essential in order to familiarize yourself with its safe operation and capabilities. **Review all instructions in this manual prior to first use.**

Applications

Some applications of the ALM include:

- line deployment to establish a messenger or load line
- ship to ship line deployment
- ship to shore line deployment
- vessel stopping
- retrieval of mooring lines
- deployment of spill containment booms
- deployment of grappling hook and climbing line
- deployment of grappling hook and ascending ladder

Range

The range of the ALM varies depending on:

- Type and weight of line or payload used
- Type of projectile and/or accessories used
- Air pressure in projectile at time of deployment

Note:

When installed in the Launcher, the Projectile Nozzle Valve should remain closed at all times except immediately prior to discharge.

Note:

This equipment is NOT oxygen safe! NEVER use a compressed air mixture that includes an elevated level of oxygen.

Safety Features

The launcher Safety Assembly automatically engages each time a projectile is inserted, preventing accidental launch of a projectile. An audible “Click” is heard as the projectile engages, signaling that the projectile is safely engaged with the firing mechanism.

A Pressure Relief Assembly is installed in the nozzle of each projectile. Its purpose is to prevent any unsafe pressure build up in a filled projectile, whether in the launcher or not, if exposed to extreme heat such as from a fire. This Pressure Relief Assembly will rupture if the air pressure goes over a safe limit. The Pressure Relief Assembly is not reusable and must be replaced if it should ever fail.

A second Pressure Relief Assembly is installed on the launcher mechanism and is active at all times when the mechanism is pressurized.

Multi-Shot Capacity

Our patented Nozzle-Valve Assembly permits any number of projectiles to be pre-charged and stored with each unit allowing deployment of multiple projectiles in rapid succession.

Fueled by Compressed Air

The intended fuel for this system is compressed air - which is non-flammable and non-combustible.

CAUTION: The use of any other compressed gas - either flammable and/or combustible, may result in a spontaneous explosion causing severe injuries or death.

ALM Launcher

Part # 540

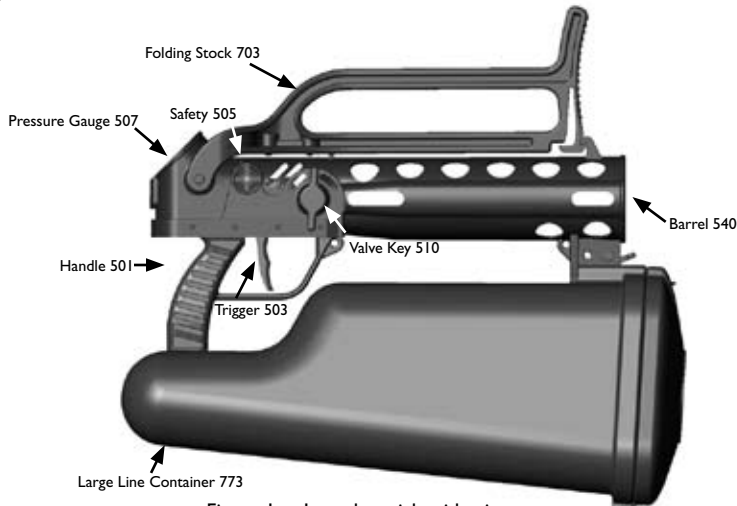


Figure 1a - Launcher, right side view

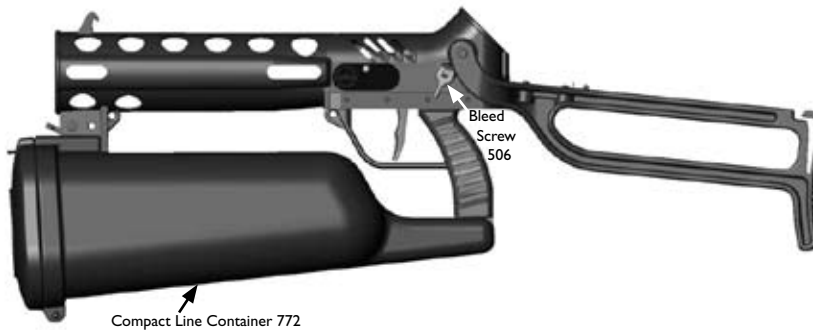


Figure 1b - Launcher, left side view

Line Containers

Part #772;773

Standard lines offered with the ALM use the Compact Line Container (Fig. 1b) or the Large Line Container (Fig. 1a), depending on the size of the payload.

Folding Stock

Part #703

The ALM has been designed to be used with a folding stock. This will enhance the operator's ability to aim the projectile more accurately. (Fig. 1b) When in the folded position the stock becomes a convenient carrying handle. (Fig. 1a)

Streamline Filler Hose Assembly

Part #911-S; 912-S; 913-S

The Streamline Filler Hose Assy. is used to deliver compressed air from a compressor, SCBA bottle or SCUBA bottle to the projectile cylinder. This provides the “charge” for the launcher. Specific fittings must be used for interfacing with each of the following: North American SCBA, European SCBA (DIN), Japanese SCBA, and SCUBA. Please ensure that your Streamline Filler Hose is equipped properly for your source of compressed air.

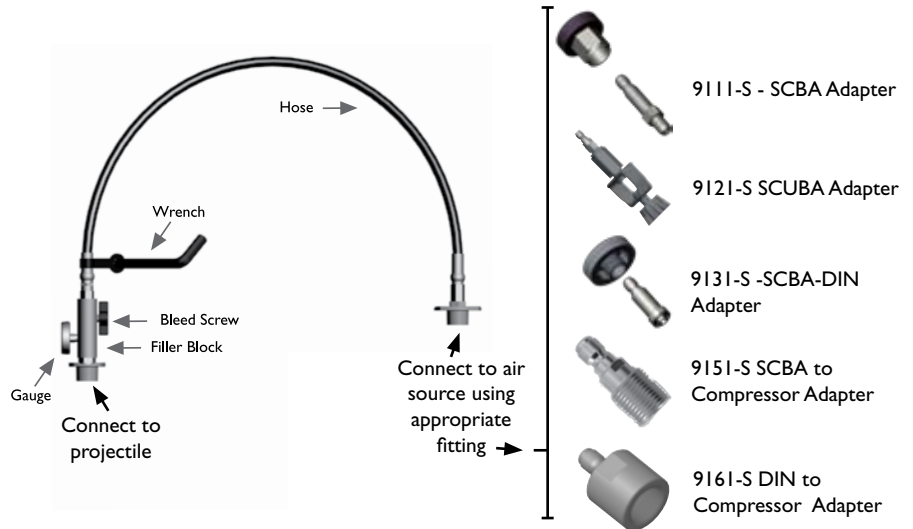


Figure 2 - Streamline Filler Hose Assembly

ALM Tool Kit

Part # 991

The Tool Kit provides all the tools you will need for operational maintenance of your ALM. See page 30 for more detail.



Figure 3 - ALM Tool Kit 991

Projectiles

Part # 300-S; 305-S; 306-S; 310-S

The ALM can be supplied with three types of projectiles: Training Projectile, Standard Line Projectile, and the High Pressure (HP) Projectile. (Fig. 4a) Each projectile will deploy a variety of line over a range of distances, depending on the service pressure, the volume of the cylinder, and the type of line used. (See Page 5) The Training Projectiles and the Standard Projectile have a service pressure of 3,000psi / 207 BAR and the HP Projectile has a service pressure of 4,500 psi / 310 BAR. The cylinders must be inspected before and after each use. If the cylinder sustains any visible damage from contact with a hard surface then it must not be re-used. If the protector shows signs of damage after use it must be removed. (See Page 19)

Each projectile is made up of: Projectile Cylinder, Nozzle Assembly, and Bridle Lines with a Quick Connect. A projectile cover (Part # 610) may be used on standard projectiles for horizontal line deployment.

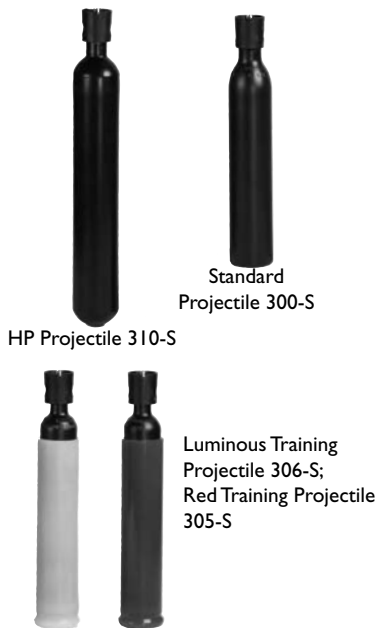


Figure 4a - Projectile Offerings

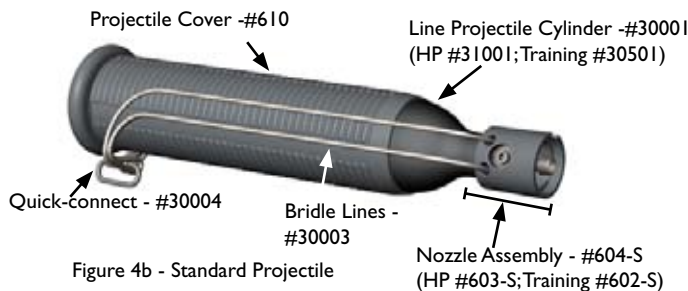


Figure 4b - Standard Projectile

Climbing Grappling Hook

Part # 750

The Climbing Grappling Hook is manufactured from titanium to provide the best balance between strength and weight. (Fig. 5) This hook is used to establish a climbing line, a tactical ladder, or to recover mooring lines, and is certified for climbing by the manufacturer. Loads imposed on the hook should never exceed the design rating. Each hook is dipped in polyethylene based thermoplastic (EFEX) to reduce signature noise.

Design Rating -- Ultimate Strength of 2,200lbs / 1,000kg.
Recommended loads not to exceed 730lbs / 330kg



Figure 5 - Climbing Grappling Hook 750

Note:

If the projectile cylinder shows signs of damage, it must be removed from service **immediately**.

Note:

Custom Grappling Hooks are available on a special order basis.

Note:

The types of uses that the Climbing Grappling Hook is subjected to are beyond the control of the Manufacturer. It is the responsibility of the purchaser to ensure that the Climbing Hook is inspected and maintained using methods that will ensure that it remains suitable for its intended use.

Line & Ladder Options

In addition to the line options shown, customized lines & ladders are available to suit specific applications.

Any line type may be combined with any projectile option.

Part #	Description	Minimum Break Load		Weight per Length		Length	
		lbs	kg	lbs	kg	ft	m
801	7mm Nylon/Spectra Climbing Line	5780	2622	3.96	1.8	165	50
802	5.5mm Nylon/Spectra Climbing Line	3200	1194	2.60	1.2	330	100
815	8.4mm Dynamic Climbing Line	3442	1565	7.0	3.2	230	70
744	50ft / 15m Tactical Ladder	4,800	2180	5.9	2.7	50	15
746	65ft / 20m Tactical Ladder	4,800	2180	8.0	3.6	65	20

★ Custom line options and ladder lengths to meet user requirements are also available.

Tactical Ladder

Part #744; 746

Lightweight, durable, and acoustically covert. Constructed of nylon webbing with fiberglass rungs at 12 in/30 cm o.c., this ladder is available in 50ft/15m or 65ft/20m lengths which can be fully deployed vertically. Side members have a combined breaking strength of 4,800lbs/2,180kg.

NOTE: Custom lengths available.

Figure 6 - Tactical Ladder



Transport/Storage Case

Part #909

An unbreakable, watertight, dust proof, chemical resistant and corrosion proof case made of Ultra Impact structural copolymer, with a lifetime guarantee. The case may be adapted to fasten to the railing of a platform, or to the stern of a vessel, making the ALM immediately available. When equipped with an extending handle and rollers, this case is used for transport and storage of your kit.



Figure 7a - Pelican Transport/Storage Case

Kit Carry Bag - Black

Part #906

The Kit Carry Bag measures 13" w x 27" l x 18" h (35 cm x 70 cm x 45 cm) is made from 1000 denier Cordura fabric, with 2 external zippered pockets and one internal zippered pocket, and has a weatherproof membrane over the entire footprint.



Figure 7b - Carry Bag

Filling the Projectiles

To properly fill the Projectile you need a source of compressed air that is at least capable of reaching the service pressure of the Projectile. The Standard and Training Projectiles have a service pressure of 3,000 psi / 207 Bar. The High Pressure Projectile has a service pressure of 4,500psi / 310 BAR.

The **Streamline Filler Hose Assembly** is required to charge the Projectiles with compressed air. It consists of a **Filler Block** that includes a Pressure Gauge and Bleed Screw, two Quick Couplers, the Hose, and the Valve Wrench with a Lanyard. (Fig. 2)

Check that the Nozzle Valve on the Projectile to be filled is in the open position. When the Nozzle Valve is in-line with the flow of air, the Nozzle Valve is open (Fig. 8a).

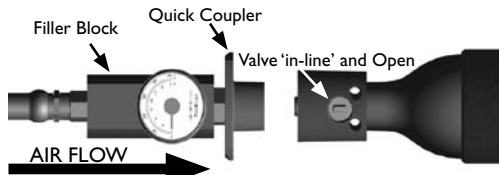


Figure 8a - Nozzle Valve Open

When perpendicular to the flow of air the Nozzle Valve is closed (Fig 8b).

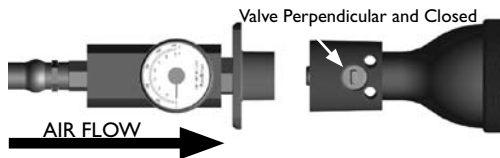


Figure 8b - Nozzle Valve Closed

1. Connect the appropriate Filler Hose Adapter to the associated Air Supply.
2. Connect the Filler Hose to the Filler Hose Adapter by retracting the spring-loaded Quick Coupler on the end of the Streamline Filler Hose farthest from the Filler Block. (Fig. 2)
3. Retract the spring-loaded Quick Coupler on the Streamline Filler Hose Assembly closest to the Filler Block (Fig. 8c) and insert the neck of the Quick Coupler inside the Nozzle Protector to connect the Filler Hose to the Nozzle. (Fig. 8d)



Figure 8c - Retract Collar



Figure 8d - Attach Filler Hose

Note:

Use Compressed Air Only.

The use of any flammable or combustible compressed gases, especially at high pressures, may result in a spontaneous explosion causing severe injuries or death.

Note:

The operating/ service pressure of the projectile should only be exceeded in response to a life-threatening emergency - and under no circumstances should it be exceeded by more than 20%. Ignoring this advice may cause an accident that could result in bodily injury or death.

Note:

Attempting to fill the projectile with the Nozzle-Valve closed will result in damage to, or loss of the O-ring on the face of the Nozzle Plug. This must be replaced prior to proceeding. See Page 31 Fig 25b.

4. Ensure that the red Bleed Screw on the Streamline Filler Hose Assembly is closed, by turning in a clockwise direction. (Fig. 8h)
5. Ensure that the Nozzle Valve is in the **OPEN** position - with the Nozzle Valve "in line" with the flow of air. (Fig. 8e)
6. Open the air-supply and **SLOWLY** fill the Projectile to the desired pressure. (If you hear air escaping, the Bottle O-ring or an O-ring in the Nozzle is damaged and needs to be replaced. Page 28)
7. Close the Valve on the Air Supply.
8. Remove the Filler Hose Wrench from the Streamline Filler Hose Assembly and close the Nozzle Valve by rotating the Nozzle Valve 90 degrees. (Fig. 8f)
9. Ensure that the Nozzle Valve is perpendicular to the flow of air. (Fig. 8g) Always replace the Filler Hose Wrench back in the lanyard on the Filler Hose.
10. Next, locate the drain port adjacent to the red Bleed Screw on the Filler Block. (Fig. 8h)
11. Point the drain hole down and away from the operator and open the bleed screw, draining pressure from the Filler Hose Assembly.

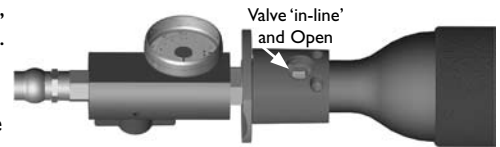


Figure 8e - Open Nozzle Valve

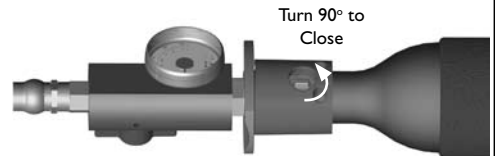


Figure 8f - Rotate the Nozzle Valve

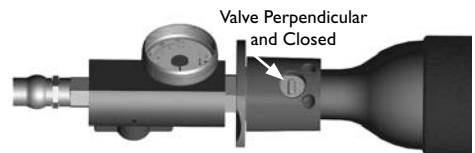


Figure 8g - Nozzle Valve Closed

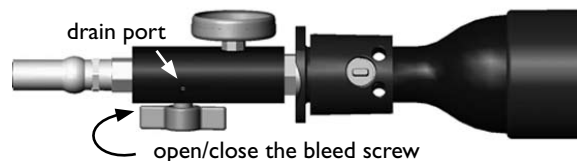


Figure 8h - Control the air in the Filler Hose with the Bleed Screw

12. Retract the spring-loaded Quick Coupler on the Streamline Filler Hose Assembly (Fig. 8i) and detach the Filler Hose Assembly from the Nozzle. (Fig. 8j)

13. Store the charged projectile in a safe location.

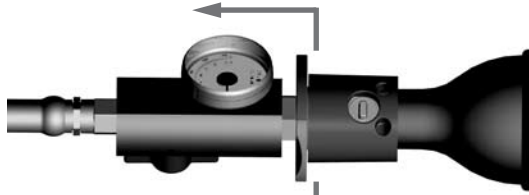


Figure 8i - Retract Quick Coupler

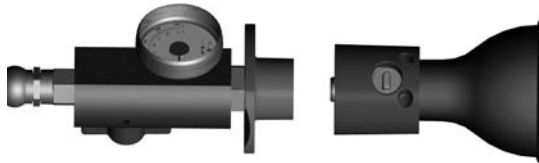


Figure 8j - Disconnect Hose

Storing Projectiles

Projectiles that are charged and ready for use should be stored in a constant temperature environment and protected from the elements. Charged projectiles should be so marked. Pressure in stored projectiles should be checked periodically to verify that the desired service/operating pressure is being maintained.

Caution: If projectiles are subjected to extreme heat the pressure could rise sufficiently to rupture the Pressure Relief Assembly, and allow the air to escape, preventing use of the equipment. Refer to page 32 for instructions on removing and replacing the Pressure Relief Assembly.

Using the Folding Stock

To extend the stock from the collapsed position (to the firing position) push downward at the butt of the Stock and apply pressure with your thumb on the butt to release the Stock (Fig 9 - Step 1). Rotate the Stock to the rear of the launcher (Fig. 9 - Step 2). The Stock Catch Plate will automatically engage.

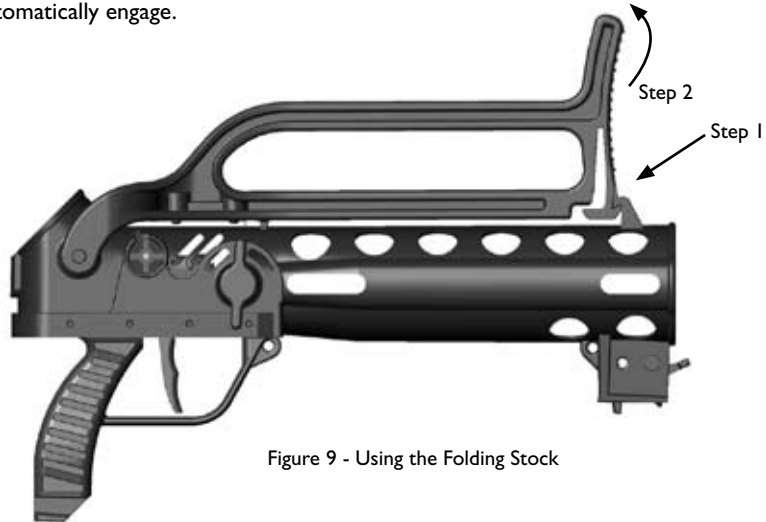


Figure 9 - Using the Folding Stock

To fold the stock into the collapsed position (for use as a handle) pull back on the Stock Catch Plate with your thumb to disengage the catch (Fig. 10 - Step 1). Rotate the stock over the top of the Barrel (Fig. 10 - Step 2) and engage the butt of the Stock with the sighting hook on the front of the Barrel (Fig. 10 - Step 3).

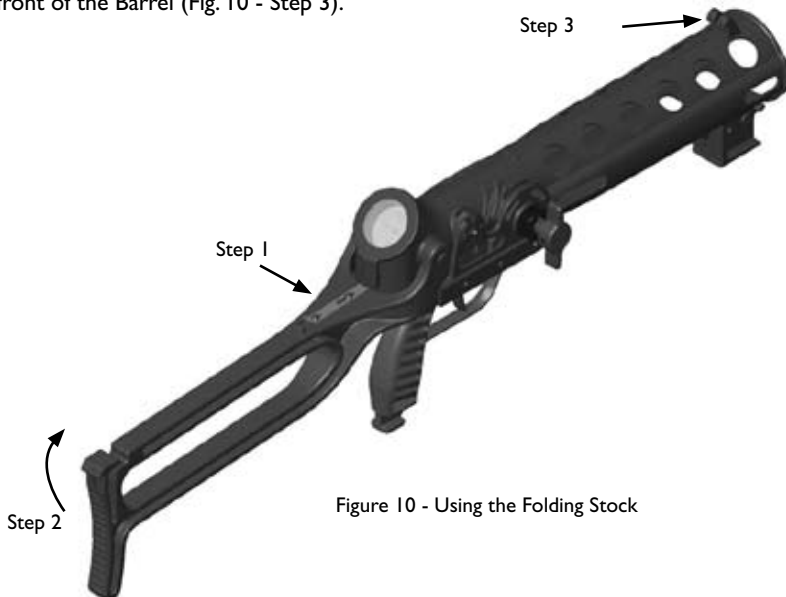


Figure 10 - Using the Folding Stock

Connecting the Launcher to the Line Container

1. Place the inverted "T" bracket (on the bottom of the Barrel at the front) on top of the line container; just behind the inverted "T" groove on the upper portion of the front of the line container. (Fig. 11a - Step 1)
2. Locate the bottom of the handle so that notches on the handle will engage with the flange at the rear of the line container. (Fig. 11a - Step 2)
3. Slide the launcher forward inside both the front and rear grooves of the line container simultaneously. Push firmly forward until the catch on the launcher automatically engages in the locking hole in the line container. (Fig. 11a - Step 3)

(Follow directions on Page 20 to insert projectile and configure the lines.)

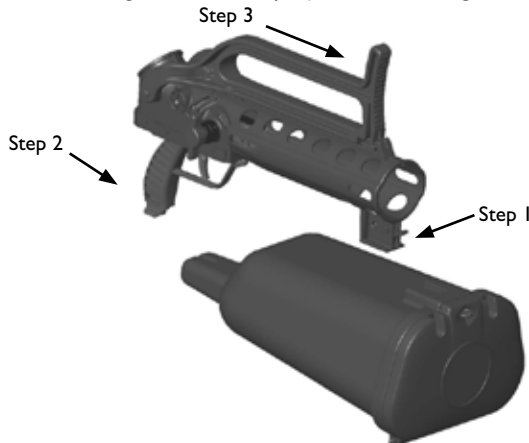


Figure 11a - Connecting the Launcher to the Line Container

Disconnecting the Launcher from the Line Container

4. Push down on the Line Container Catch located at the front of the Launcher, just below the barrel opening (Fig. 11b - Steps 4)
5. Slide the launcher rearward (Fig. 11b - Steps 5)

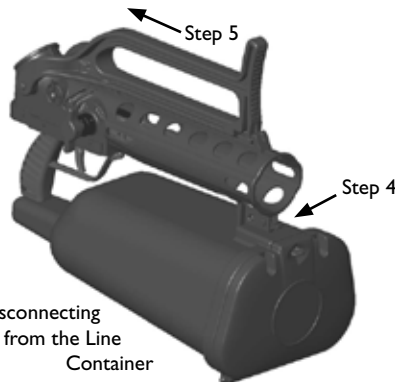


Figure 11b - Disconnecting the Launcher from the Line Container

Note:

If the line container is still packed when disconnecting the container it is first necessary to disconnect the "live end" from the bridle lines and the "dead end" from the launcher eyelet.

Safety Assembly

Note:

If the trigger is moved forward manually prior to another projectile being inserted, it is necessary to press the Safety Push Knob to release the safety internally, prior to inserting another projectile.

Safety Push Knob

The Safety Push Knob is a circular black button located on the same side of the launcher as the Valve Key, and directly above the trigger.

This Safety Push Knob is at rest when protruding slightly from the side of the launcher housing. (Fig. 12a)

The Safety Assembly engages automatically each time that a projectile is inserted into the launcher. An audible “Click” indicates that the safety has engaged.

Press the Safety Push Knob to the “off” position immediately before firing the launcher. When in the “off” position the Safety Push Knob remains recessed inside the cavity about $\frac{1}{4}$ ” or 6 mm. (Fig. 12b)

After firing the launcher the Safety Assembly will re-set itself to accept the next projectile. When a new projectile is loaded, the trigger will automatically move forward and the safety will engage.

Re-Setting the Safety

If the Safety Push Knob has been pressed to the “off” position and for any reason it becomes necessary to re-set the Safety without firing the launcher, apply forward pressure on the arm of the Safety Push Knob and rotate the Safety Push Knob clockwise. A rotation of only a few degrees is required. (Fig. 12c) The Safety Push Knob will return to its rest position, protruding slightly from the side of the launcher housing indicating that the Safety Assembly has been re-engaged, and is in the “on” position. (Fig. 12a)

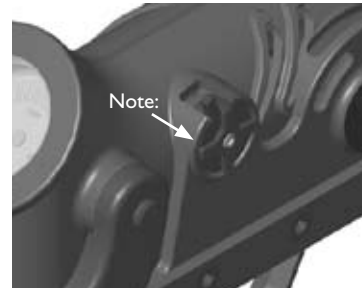


Figure 12a - Safety On

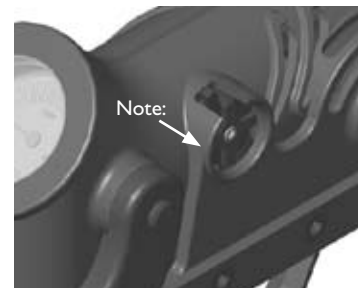


Figure 12b - Safety Off



Figure 12c - Reset Safety

Note:

For maritime applications, the safety can be reset by applying forward pressure on the arm of the Safety Push Knob. This arm provides for easy use if the end-user is wearing gloves.

Launcher Bleed Screw

Launcher Bleed Screw Operation

Each Launcher is equipped with a Bleed Screw located near the ALM label on the Launcher. (See Fig. 2) The Bleed Screw Handle swivels over the Bleed Screw Bolt, to permit the Bleed Screw to be turned without interfering with the Folding Stock.

Reducing the Pressure in a Loaded Launcher

If necessary, the operating pressure of the Projectile can be reduced prior to discharge. This will shorten the range of the projectile. Follow these steps:

1. Open the Nozzle Valve to pressurize the Launcher. (See page 18)
2. Rotate the Bleed Screw Handle in a counter-clockwise direction until you hear air escaping from the projectile and mechanism. (Fig. 13a - Open)
3. Monitor the Pressure Gauge until the desired operating pressure is achieved.
4. Rotate the Bleed Screw Handle in a clockwise direction to stop the escape of air (Fig. 13a - Close).

Removing a Charged Projectile without Firing

If necessary, the projectile can be removed from charged launcher as follows:

1. Use the Valve Key on the Launcher to close the Nozzle Valve on the Projectile. (Fig. 14d)
2. Open the Bleed Screw by rotating the Bleed Screw Handle in a counter-clockwise direction to release the compressed air from the mechanism. (Fig. 13a)
3. Listen for all the air to escape and monitor the Pressure Gauge until it reads "0".
4. Rotate the Bleed Screw Handle in a clockwise direction to tighten.
5. Disengage the Safety and pull the Trigger to release the projectile into your hand or the ground.

Note:

There is a small nylon insert pressed into the threaded end of the Bleed Screw, which acts to seal the opening when the Bleed Screw is tightened. If the Bleed Screw is removed entirely, for maintenance or any other reason, ensure that the nylon insert remains fixed to the Bleed Screw prior to returning the ALM unit to service. See Fig. 13b.



Figure 13a - Open/Close Bleed Screw



Figure 13b - Nylon Tipped Screw

Pressurizing the Launcher

The Valve in the Nozzle of each Projectile is intended to be opened using the Valve Key attached to the Launcher Housing. The “V” groove on the Nozzle Protector properly aligns the Nozzle Valve with the Valve Key. The Valve Key is not engaged with the Nozzle Valve when fully extended (Fig. 14a). The Valve Key is engaged with the Nozzle Valve when fully depressed. (Fig. 14b)

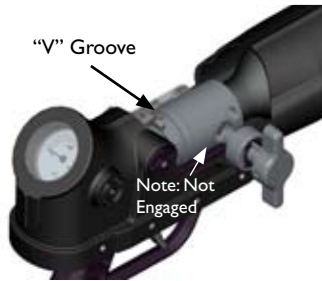


Figure 14a - Valve Key Not Engaged.

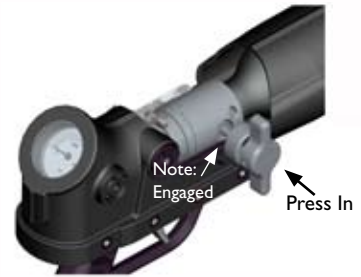


Figure 14b - Valve Key Engaged.

Note:

Some initial resistance may be experienced when trying to turn the Valve Key. However, once the Key begins to rotate it will turn easily. Be certain to rotate the Key a full 90 degrees..

When installed in the Launcher, a freshly charged Projectile will have the Nozzle Valve in the vertical position.

Opening the Nozzle Valve

1. Press valve key all the way in while in vertical position so that the valve key makes contact with the nozzle valve. **Maintain constant pressure.** (Fig. 14b - Step 1)
2. While pressing in, rotate the Valve Key 90 degrees in a clockwise direction. (Fig. 14c - Step 2) After rotating 90 degrees, release the Valve Key allowing it to extend fully. (Fig. 14d)



Figure 14c - Open Nozzle Valve

Closing the Nozzle Valve in the Launcher

3. Press the valve key all the way in, while in the horizontal position. **Maintain a constant pressure.** (Fig. 14d - Step 3)
4. While pressing in, rotate the Valve Key 90 degrees in a counter-clockwise direction. (Fig. 14d - Step 4)
5. Release the Valve Key allowing it to extend fully (see Fig. 14a-- above)

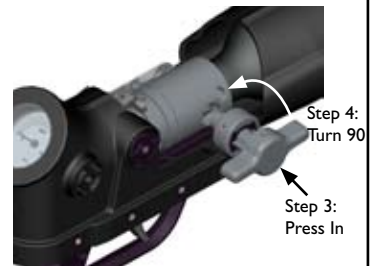


Figure 14d - Close Nozzle Valve

Projectile Protectors

A black projectile cover (protector) (Fig. 15a) is recommended when deploying a line with the standard line projectile. Each standard line projectile is supplied with a protector slipped over the projectile cylinder. Please note: The projectile cover can not be used with the Grappling hook.

The protector may be removed to inspect the projectile cylinder for damage and can be re-installed. If the protector shows any sign of damage (Fig. 15b), it should be removed immediately and the cylinder should be inspected.

The cover for the Training Projectile is made of high density urethane and absorbs the shock of impact when landing on a hard surface. This cover is factory installed. To remove the training projectile cover, it may be necessary to cut it completely.

Projectile Damage

The projectile is primarily a compressed air cylinder. IF THE CYLINDER SUSTAINS ANY VISIBLE DAMAGE FROM CONTACT WITH A HARD SURFACE THEN IT MUST NOT BE RE-USED.

A cylinder with minor scratches to the paint (Fig. 15c - Note 1) may be returned to service.

However, if the cylinder surface shows any signs of deformation (indentation or deflection) (Fig. 15c -Note 2), the cylinder must be removed permanently from service.

If deployed into water, the projectile can be used over again hundreds of times. Use caution when pulling the projectile back to avoid damaging it. Always wash in fresh water. Remove all water from inside cylinder and allow to dry before storage or re-filling.



Figure 15a - Projectile Cover (Standard Line Projectile Only)



Figure 15b - Training Projectile Cover Damage

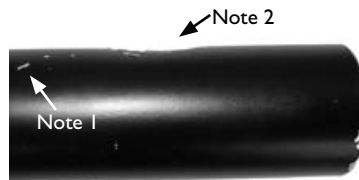


Figure 15c - Deformation on Projectile

Note:

Any damage to the projectile protector may indicate damage to the cylinder. If the protector is damaged the cylinder must be visually inspected for damage. Damaged protectors should be replaced to protect the projectile cylinder.

Note:

If the Nozzle Protector isn't oriented properly, the nozzle will not be able to engage the mechanism. An audible "Click" indicates the Safety Assembly is engaged.

Loading Projectile In Launcher

1. Pull the quick-connect that connects the bridle lines to allow the projectile to find the center-point of the bridle lines. (Fig. 16a)
2. Ensure that the safety is in the "off" position internally by pressing the "Safety Push Knob."
3. Insert the line projectile into the launcher with the "V" in the Nozzle Protector upward, keeping the bridle lines tight and uncrossed along each side of the projectile. Rotate the projectile as necessary until you feel the "V" groove engage with the mechanism and apply pressure to the projectile. An audible "Click" will signal that the projectile is properly inserted in the mechanism and the safety is engaged.
4. The bridle lines and the quick connect are used to secure the projectile to the payload. (As described in the next section.)

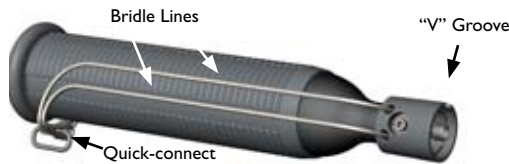


Figure 16a - Projectile with Bridle Line

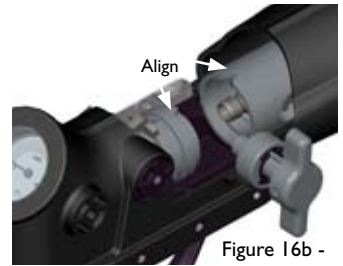


Figure 16b - Align Projectile and Mechanism

Connecting the Lines

Each payload has a "live end" which travels with the projectile. The "live end" has Cut-away Pin secured on the end of the payload or at the base of the leader or tether. The Cut-Away Pin holds the Line Container Door closed until deployment, automatically releasing the door of the line container to allow the line to follow the projectile without resistance. Climbing Lines and Ladders have a 5-6 foot leader or tether which will connect to the Grappling Hook. The end of the payload which does not travel is called the "dead end". The "dead end" of the Climbing Line fastens to the eyelet behind the inverted "T" Bracket of the launcher. (See Page 22) The "Dead End" of the SF40 and the Tactical Ladder are packed inside the Line Container and therefore do not fasten to the Launcher Eyelet.

Note:

The SF40 and the Tactical Ladder do not require the 'dead end' to be clipped to the Launcher's Eyelet.



Figure 16c - Ascending Ladder with out "Dead End"

Figure 16d - Climbing Line "Live" and "Dead" Ends

Preparing the Grappling Hook for Deployment

The Climbing Grappling Hook is a light-weight titanium hook intended to be used for establishing a line, such as across a river or stream, for recovering a mooring line from the water, or for deploying and establishing a Climbing Line or Ladder. Tactical Ladders are equipped with a permanently fixed attachment tether. The Tactical Ladder tether and the Climbing Line Leader are intended to be connected directly to the eyelet on the shaft of the Climbing Grappling Hook – ensuring a direct connection from the fixed point of the Hook to the Climber. The Climbing Grappling Hook may not be used with a projectile protector.

Prepare the Grappling Hook as follows:

1. Lash the “live end” of the Climbing Line leader or the tether of the Tactical Ladder to the eyelet on the shaft of the Climbing Grappling Hook, using a Figure Eight or similar secure knot. (Fig. 17a)
2. Install the Grappling Hook over the end of the Projectile, Align the “V” of the Nozzle Protector at 90 degrees to the eye of the Grappling Hook to keep the lines oriented correctly. . (Fig. 17b)
3. Run the leader (or tether) along the side of the charged Projectile.
4. Fasten the line to the neck of the Projectile with the Velcro strap provided. (Fig. 17c)
5. Return the line towards the Grappling Hook along the opposite side of the Projectile. (Fig. 17d)
6. Together with the leader (or tether) keep the bridle lines along the side of the projectile in order to align with the grooves on each side of the Launcher Barrel. (Fig. 17e)



Figure 17a - Attach Line to Hook

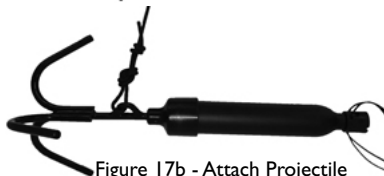


Figure 17b - Attach Projectile to Hook

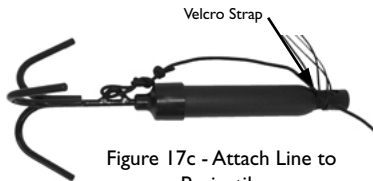


Figure 17c - Attach Line to Projectile

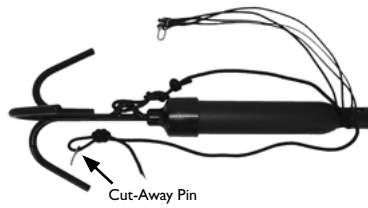


Figure 17d - Loop Line back around Projectile

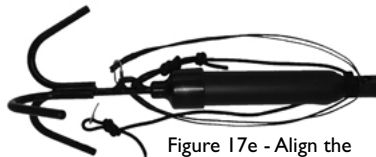


Figure 17e - Align the Climbing Line and the Bridle Lines along each side of the Projectile

Note:

Align the “V” on the Nozzle Protector 90 degrees to the eye of the Grappling Hook. This will ensure that the lines will slide into the grooves on the side of the barrel when the projectile is engaged.

7. Re-engage the Cut-Away Pin to fasten the line container door closed.
8. Keeping the lines along the side of the projectile, insert the projectile into the launcher as outlined on Page 20. Ensure the bridle lines are centered to achieve a straight shot by pulling the Quick-Connect.
9. Using the Quick-Connect on the bridle line, attach the bridle lines to the loop containing the Cut-away Pin on the Climbing Line or Tactical Ladder. (Fig. 17f)
10. Connect the “Dead End” to the eyelet behind the inverted ‘T’ Bracket of the launcher if using a climbing line. (The Tactical Ladder does not have a ‘Dead End’) (Fig. 17f)

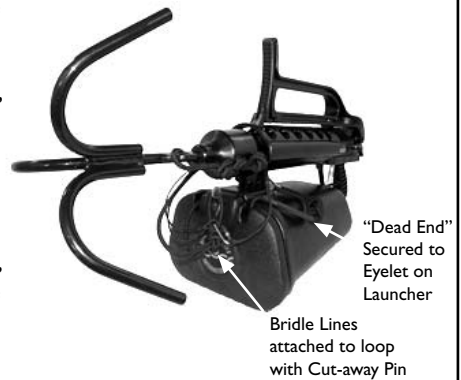


Figure 17f - Climbing Line and Grappling Hook Ready for Deployment

You are now ready to deploy the Payload and Grappling Hook.

Preparing For Horizontal Deployment:

A Climbing Line deployed horizontally at full service pressure will reach full extension in approximately one second and apply a concentrated force on the “dead end” of the line which may result in the loss of the launcher equipment and injury to the operator. Use the Bleed Valve to reduce pressure to suit length of line being used. The payload and projectile should be arranged as follows for horizontal line deployment:

1. Attach the Line Container to the Launcher, as described on Page 15.
2. Follow the directions in the section on Page 20 called “Loading Projectile into Launcher:”
3. Connect the Quick-Connect on the bridle lines to the loop containing the Cut-away Pin. (Fig. 17g)
4. Connect the “Dead End” to the eyelet behind the inverted ‘T’ Bracket of the launcher if using a climbing line. (The SF40 does not have a ‘Dead End’)

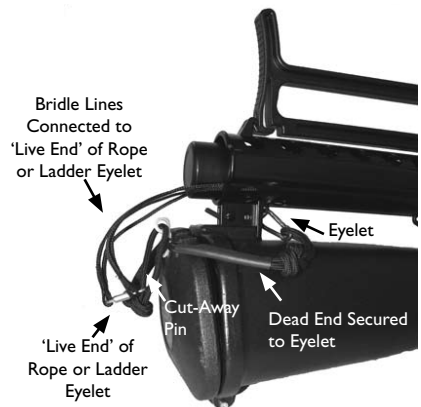


Figure 17g - Climbing Line or SF40 Payload Ready for Deployment

Packing the Climbing Line

All lines used with the ALM may be re-packed in the field by hand as necessary, without the use of any special equipment. Each line has a dedicated “dead end” & “live end”. The “live end” of the rope is that which travels with the projectile. The “dead end” does not travel.

When packing the line container, the easiest method is as follows:

1. Disconnect the line container from the launcher, and hold it vertically, with the door open toward you.
2. Allow 12 inches / 30cm of the “dead end” of the rope (fitted with the snap shackle) to hang freely outside of the right side of the line container (Fig. 18a) and begin dropping the line inside the container.
3. Pull the line from over your shoulder so that you can push it down into the container hand over hand, using short strokes (Fig. 18b).
4. Allow the line to “fall” into the container in a random, crisscross pattern to avoid any snarls when it is deployed. Periodically push the line down into the container to make enough room for the entire payload.
5. When all of the line is packed inside the container close the container door leave the “live end” of the rope (with teather, if applicable) through the notch on the left hand side of the door catch, and the “dead end” of the rope through the notch on the right hand side.
6. Fasten the line container door closed by inserting the Cut-Away Pin through the black elastic retaining loop that protrudes through the line container door in the closed position. (Fig. 18c - e)
7. Store the Line Container as is, or re-install the line container on the launcher (Fig. 11a) and follow steps outlined on page 20 for loading the launcher.



Figure 18a - Leave Dead End out of Line Container



Figure 18b - Pack Line into Container

Note:

The eyelet on the launcher is not intended to be used in the recovery of a victim from the water, or in conjunction with a messenger line. Pull directly on the line.

Note:

DO NOT coil or loop the line, EVER! If you coil the line you may build in tension that will cause snarls the next time you use it resulting in poor performance during deployment.

Note:

The main line and bridle lines should be inspected after each use for fraying or damage before storing for later use. Inspect the line before packing and then pack as instructed in this packing section. Any damaged or frayed line or bridle lines must be permanently removed from service.

Remember:

If immersed in seawater, all lines and projectiles must be rinsed with fresh water and dried thoroughly after use, and prior to being refilled or stored.

Note:

The cut-away pin may be attached to the bridle line when using the grappling hook.

Packing the Tactical Ladder

1. To pack the tactical ladder, begin with the bottom rung of the ladder and progressively pack rungs into the container, taking care not to allow the side rails to twist (Fig. 18c).
2. When all rungs have been packed close the container door -- allowing fixed point of ladder and tether to remain outside container door for attachment to the grappling hook. (Fig. 18d)
3. Use Cut-Away Pin to fasten the line container door closed. (Fig. 16c)
4. Store the Line Container as is, or re-install the line container on the launcher (Fig. 11a) and follow steps outlined on page 20 for loading the launcher.



Figure 18c - Start Packing 'Dead End'



Figure 18d - Leave the Tether out of the Line Container

--	--

--	--

Operation

Deploying the ALM

1. Conduct a visual inspection to ensure that the bridle lines (if used) are properly connected and centered (Fig. 16c - d)
2. Fully depress the Valve Key in the vertical position, and rotate the Valve Key 90 degrees clockwise to the horizontal position. Release the Valve Key. (Page 18 - Fig. 14a - c)
3. Check the pressure gauge to verify pressure. (No pressure reading on the gauge may indicate that you did not successfully open the Nozzle Valve or that your Projectile was not charged with air when loaded in the Launcher.)
4. Disengage the Safety by pressing the Safety Push Knob. (Page 16 - Fig. 12b)
5. For horizontal line deployment hold the butt of the stock against your shoulder as you would a firearm, at a 35 degree angle aiming OVER the intended target. (Fig. 21a)

Note:

The Climbing Lines and Ladders are intended for vertical deployment and are too short to deploy horizontally at full service pressure. A Climbing Line deployed horizontally at full service pressure will reach full extension in approximately one second -- and apply a concentrated force on the "dead end" of the line -- which may result in the loss of the launcher equipment and injury to the operator. Use the Bleed Valve to reduce pressure to suit length of line being used.

- 5a. For maximum vertical deployment of a Climbing Line or Ladder & Hook hold the stock of the launcher against your shoulder and aim approximately 10 degrees clear of the intended target and at 80 degrees to a horizontal plane. (Fig. 21b)

Note:

Once deployed, the Climbing Line and Hook arrangement will descend toward the operator very quickly if the Hook does not engage the targeted area. Extreme care must be taken by the operator to avoid being struck by the Climbing Line or Ladder and Hook during its downward descent.

6. Using two fingers, squeeze the trigger. Hold the ALM steady as the projectile leaves the launcher and the line or payload "pays out."

Note:

Adequate training in all aspects of the use of this equipment is essential in order to familiarize yourself with its safe operation and capabilities -- and to deploy it with accuracy.

Note:

The security of the engagement point of the grappling hook is beyond the manufacturer's control. It is the responsibility of the purchaser and/or operator of the ALM to ensure that the grappling hook is properly fixed and safe for a human being to ascend. The first climber of any ascent team is responsible for lashing the climbing line to a fixed point. The hook is intended to be ascended by a single climber per use.



Figure 21a - Angle for Horizontal Deployment



Figure 21b - Angle for Vertical Deployment

Note:

Repeated pressure checks of a projectile will result in a gradual lessening of pressure. It will be necessary to top it up using the procedure as described on page 11. This is also a good opportunity to have a practice launch.

Checking Projectile Pressure

All stored Projectiles should be checked on a regular basis to ensure that the service pressure is maintained. To check the projectile pressure, do as follows:

1. Load Projectile into the Launcher,
2. Open the Nozzle Valve using Valve Key. (Page 18)
3. Confirm the Projectile pressure using the reading on the Pressure Gauge.
4. **Close the Nozzle Valve.**
5. Rotate the Bleed Screw to release the air from the mechanism. Pressure Gauge must read "0". (Page 17)
6. Disengage Safety. (Page 16)
7. Release the Projectile by pulling the trigger and return the Projectile to storage or refill for another shot.

Removing a Charged Projectile from the Launcher

If you wish to remove a charged Projectile from the Launcher without firing it:

With **NO** pressure indicated on the launcher gauge:

1. Push in the Safety Button.
2. Pull the trigger, releasing the Projectile.

With Pressure indicated on the launcher gauge:

If you have the Launcher ready to fire and have pushed in the Safety Push Knob but change your mind about firing for some reason OR if you are handed a Launcher with pressure indicated on the gauge:

1. Use your thumb to reengage the Safety by applying pressure and rotating the Safety Push Knob a few degrees in a clockwise direction. It will then spring out again. Do not over rotate, only a few degrees of movement are necessary. (Page 16 - Fig. 12c)
2. Close the Nozzle Valve by depressing the Valve Key in the horizontal position and rotating it counter-clockwise 90 degrees to the vertical position. Release the Valve Key. (Page 18 - Fig. 14d)
3. Open the Bleed Screw and allow the air in the mechanism to escape. (Page 17 - Fig. 13a) The Pressure Gauge will drop to a reading of "0".
4. Disengage the Safety by pushing in the Safety Push Knob.
5. Pull the trigger to release the Projectile into your hand or the ground.

Note:

If the Pressure Gauge on the Launcher does not show "0" pressure Turn the Bleed Screw in a counter-clockwise direction, and allow the pressure from the Mechanism to escape before attempting to remove the projectile.

--	--

Care of the Projectile(s)

The Projectile can be used over and over again if cared for properly. Any visible damage to the projectile on the exterior is cause for immediate replacement. **DO NOT ATTEMPT TO REFILL A DAMAGED CYLINDER.** (See page 19) This may cause an accident resulting in bodily injury or death.

If discharged into water, after use and before filling again to be stored, the projectile should have the Nozzle Assembly removed and be allowed to completely dry inside. Often, especially if deployed into seawater, there will be water residue in the cylinder that may give rise to corrosion if not removed.

Note:

Inexpensive replacement cylinders are readily available from the manufacturer. **DO NOT use a visibly damaged cylinder!**

1. Unscrew the Nozzle Assembly from the end of the projectile in a counter-clockwise direction. (Fig. 23a)
2. Flush all parts, including the Nozzle, with fresh water, shake out excess water and let dry.
3. Inspect the inside and outside for any damage or corrosion.
4. Once dried, lubricate the threading on the Nozzle Assembly with Corrosion Block and replace the Nozzle Assembly, rotating in a clockwise direction by hand until snug. **DO NOT OVERTIGHTEN.** (Fig. 23a)

Do NOT use any sealant or tape on the thread of the nozzle. Corrosion Block can be used on any part of the Projectile. Each Projectile cylinder is intended to have a maximum service life of five years from the date of manufacture and must be removed from service at that time or sooner if there is any visible evidence of damage. Each cylinder is date stamped. It is the responsibility of the purchaser to ensure that the Projectile is not used after the service life has expired.

Care of the Launcher

The ALM Launcher is made of Powder Coated Aluminum and a Stainless Steel Mechanism. The launcher should be rinsed after all Maritime Operations in order to keep corrosion to a minimum. Corrosion Block should be used as a lubricant on the outer ring of the launcher mechanism by reaching in through the vent holes on the launcher. (Fig. 23b)

Occasionally the Mechanism O-ring may need to be replaced. If a cylinder containing residual water is pressurized and launched, this O-ring can become dislodged. If there is leaking when the projectile is loaded into the launcher and the leak is not due to a problem with one of the valve O-rings, the Mechanism O-ring should be checked. This O-ring can only be serviced with the Hook and Lift Tool. (Page 8)



Figure 23a - Removing Nozzle



Figure 23b -- Corrosion Block

Replacement of O-rings in Nozzle Valve

If the Projectile is unable to hold air the O-rings on the Nozzle Plug in the Nozzle Valve may have become worn or damaged. It will be necessary to replace them. Only use the O-rings supplied by Rescue Solutions International, Inc. These O-rings are of a special composition and hardness, and are specially selected for this purpose.

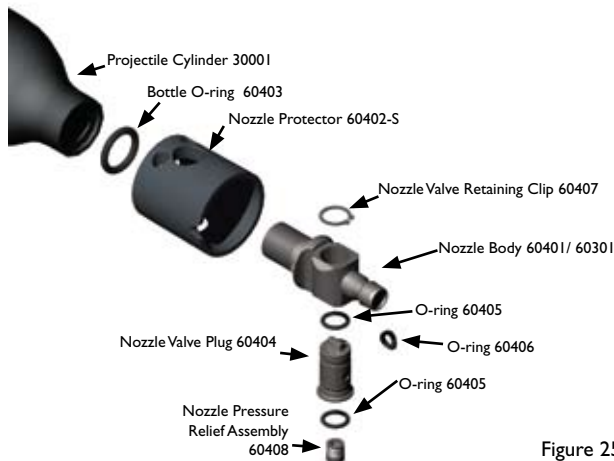


Figure 25a - Nozzle Valve Assembly 604

To Remove the Nozzle Plug:

1. Remove the Nozzle Assembly from the projectile by unscrewing it in a counter-clockwise direction. (Fig. 23a)
2. Remove the O-ring from the Nozzle threads, and slide the Nozzle Protector off of the Nozzle Body
3. Remove the Nozzle Plug Retaining Clip from the Nozzle Valve Plug using Retaining Clip Pliers. (Fig. 25a)
4. Push the Nozzle Valve Plug downward, out of the Nozzle Body.

Once the Nozzle Valve Plug has been removed:

1. Remove and discard the three old O-rings. (Fig. 25b)
2. Remove and inspect the Pressure Relief Assembly. - If it has not burst it can be reinstalled. (Fig. 25a)
3. Thoroughly clean the Nozzle Valve Plug as well as the bore of the Nozzle Body.
4. Lubricate the new O-rings with O-ring lubricant.
5. Slide the Nozzle Plug Upper & Lower O-rings into place on the Nozzle Plug using care.



Figure 25b - Nozzle Valve Plug

Note:

The Nozzle Plug "Face O-ring" is easily identified by its blue/green color. No substitute O-ring will provide adequate service or performance.

Important Note:

The beveled surface of the neck of the nozzle is subject to wear at the moment of launching. In normal conditions this part is suitable for 150 or more discharges. Carefully inspect this surface for excessive wear after each use. If there is any question regarding suitability of this part for continued use it must be removed from service and inspected by a qualified technician.

wear surface



6. Install the O-ring on the face of the Nozzle Plug, pressing it into place inside the groove around the opening.
7. Lubricate the bore of the Nozzle and the Nozzle Plug with a light film of petroleum jelly.

To reinstall the Nozzle Valve:

1. Orientate the Nozzle Valve Plug so that it is in an open position with the Face O-ring on the Nozzle Valve Plug turned at 90 degrees to the normal flow of air through the Nozzle Body. (Fig. 25c)
2. Gently insert the Nozzle Valve Plug into the opening of the Nozzle Body. Take care not to cut the O-rings against the edges of the opening on the Nozzle Body by rotating the Nozzle Valve Plug slightly from side to side as you insert. This will also assist in seating the O-rings properly.
3. Push the Nozzle Valve Plug until the “stop” side of the Nozzle Valve Plug prohibits the plug from traveling all the way through the opening in the Nozzle Body. (Fig. 25c)
4. Once fully inserted, reinstall the Nozzle Valve Retaining Clip. (Replace the Retaining Clip if it shows any sign of damage.)
5. Slide the Nozzle Protector over the Nozzle Body taking care to ensure that the aligning notch on the Nozzle Protector is engaged with the matching shape on the Nozzle Body. (Fig. 25d)
6. Re-install the Pressure Relief Assembly. (Fig. 25a)
7. Place the O-ring around the threaded end of the Nozzle and screw the assembly back into the projectile cylinder.

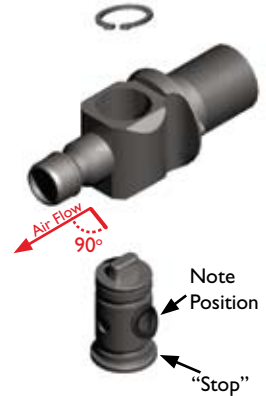


Figure 25c - Reinstalling the Nozzle Valve Plug



Figure 25d - Reinstalling Nozzle Protector

Replacement of the Nozzle Pressure Relief Assembly

If the projectile is left exposed to extreme temperatures while charged, the Pressure Relief Assembly may rupture and will need to be replaced.

1. Remove the Pressure Relief Assembly by turning counterclockwise using the T-30 Torx driver supplied in your tool kit. (Fig. 26)
2. Clear the opening and lightly lubricate with Corrosion Block.
3. Install a new Pressure Relief Assembly. (See Fig. 25a for reference)



Figure 26 - Torx Wrench and Pressure Relief Assy

Wear on the components in this system are controlled by

- **The number of uses, and**
- **The storage conditions and care the unit receives by the end user.**

With good care and proper storage conditions the serviceability of the unit is predictable. However if subjected to rough use, or if not kept clean and free from contaminants by the end user, the **need for service can be dramatically accelerated.**

Due to the high pressure of the compressed air used in this system the components of principal concern are the projectiles (see pages 8 & 9), the nozzle valve assembly, and the launcher.

In order to observe recommended service intervals it is imperative that the end user **maintain a log** tracking the number of uses of:

- **each launcher firing, and**
- **each discharge of a cylinder & nozzle assembly**

The Manufacturer recommends that this equipment be serviced, by technicians trained and certified by the Manufacturer in the maintenance and repair of this equipment, at the earliest of the following events to occur:

For the Launcher:

- **The first indication that there is any problem with the operation of the equipment,**
- **or when 300 shots have been logged, or**
- **three years from the date of purchase.**

For the Projectile:

- **The first indication of any physical external damage to the cylinder, or**
- **At the 5th year anniversary of the date of cylinder manufacture, as stamped on the neck of the cylinder.**

For the Nozzle Valve Assy:

- **The first indication that there is any problem with the operation of the equipment that cannot be corrected by the replacements of the o-rings (see page 28), or**
- **When excessive wear becomes evident on the beveled surface of the nozzle body, (see margin- Important Note: page 31), or**
- **When 150 shots have been logged on the nozzle valve assy.**

This Payload Deployment Kit may need to be depended on in a variety of emergency situations. It is possible that in many of those emergency situations a human life may depend on the reliable operation and performance of this equipment.

In order to ensure that the equipment is at all times operationally ready the Manufacturer recommends that the purchaser takes the following actions:

- **Provide adequate and frequent training in the operation of this equipment in actual field conditions**
- **Implement and maintain a program for the regular review of the equipment to insure that it is intact and complete, that projectiles are pressurized, and that the equipment is ready in all regards for use to respond to an emergency situation.**

The internal mechanism in this appliance is very complex and any maintenance or repair other than that described in this manual should be performed by a technician trained by the manufacturer in the repair of this equipment. Please contact your Rescue Solutions International distributor for more information, call 1-800-709-5018 or e-mail info@resqmax.com.

Note:

As with all equipment, lack of use can often cause more damage to the launcher than regular, or even excessive use. At a minimum every launcher should be inspected by a technician trained in the maintenance of this equipment at 36 month intervals.

Frequently Asked Questions

- Q** Why will the projectile not engage when I push it into the barrel?
- A** Two possible reasons:
1. The “V” groove on the Nozzle Protector is not being properly aligned with the mechanism. (Hold “V” upward slide projectile into the barrel and rotate gently.) (Fig. 16b)
 2. The Trigger has been manually moved forward since the last time a cylinder was removed effectively leaving the Safety “on” even though the Launcher is empty. (Press the Safety Knob to release the Safety, and re-insert the projectile as described in 1.)
- Q** How can I tell if the Projectile has any air in it?
- A** If you have a projectile with the valve closed and are not sure if it is charged, you can check this by loading it into the launcher and opening the Nozzle Valve. If the gauge shows pressure, then it is charged and you may proceed to shoot or close the valve and remove the projectile. It is a good idea to develop a system to ensure that full and empty bottles are kept separately or marked with a label. (Page 28)
- Q** How do I re-engage the safety if I do not want to shoot after pushing in the safety button?
- A** Re-set the Safety Assembly by rotating the Safety Push Knob in a clockwise direction for a few degrees. The Knob will “pop out” to re-set. (Page 16)
- Q** How do I adjust the range if I only want to shoot a short distance?
- A** The range can be adjusted by allowing some air to escape from the projectile before shooting. Open the valve and allow the mechanism to be pressurized. Carefully open the bleed screw until you hear the air slowly escaping. Watch the gauge until the pressure has dropped to the level you require, and then tighten up the bleed screw and fire. (Page 17)

Q How do I know whether or not the Nozzle Valve is open on a loaded projectile?

A The Valve Key will only depress fully when the stem of the Valve Key is aligned with the stem of the Nozzle Valve. Depress the Valve Key in the vertical and horizontal positions. Which ever position permits the Key to fully depress will represent the position of the Nozzle Valve. If horizontal the Valve is Open. If vertical, the Valve is closed. (Page 18 - Fig. 14a - d)

Q Why is the pressure in the Projectile lower when I load it in the launcher than it was when I filled it?

A When you are filling the projectile with air it will get warm. This causes the pressure to rise and you will reach your target pressure with the air in the bottle at a temperature higher than ambient. Once air in the projectile has cooled down the air will contract and lower the pressure.

This problem is addressed by two steps:
1. Fill the Projectile Cylinder VERY SLOWLY.
2. "Overfill" the Projectile by 200 psi./15 Bar to allow for the inevitable cooling of the air after filling. See Filling on Page 11

Q I installed a Projectile Cylinder and opened the Nozzle Valve, and I hear a hissing from inside the Launcher Housing how do I stop this loss of air pressure?

A In order of probability, you need to do the following:

- Tighten Bleed Screw on Launcher Housing. (Fig 13a)
- Check to ensure nylon insert is attached to Bleed Screw. (Fig 13b)
- Check Nozzle Valve O-rings. (Fig. 25b)
- Check the Mechanism O-ring

If none of these steps solves the problem contact your Rescue Solutions International, Inc. distributor.

Q I accidentally tried to fire the launcher without disengaging the safety. I then tried to disengage the safety but it seems “jammed.”

A The mechanism is under pressure. If you apply strong finger pressure against the trigger prior to releasing the safety, the air pressure in the mechanism will maintain your finger pressure against the Safety mechanism even after you remove fingers from trigger preventing it from disengaging.

To “free” the Safety and permit it to operate as intended:

- Push Trigger forward to relieve pressure
- **RELEASE SAFETY,**
- and you are all set to fire.

Q When I deploy the projectile and payload, they only go a short distance and the payload doesn’t deploy all the way.

A Common Causes include:

- Inadequate pressure in cylinder (See Page 28)
- Improperly packed payload (See Page 23 - 25)
- Improperly configured bridle lines (See Page 20 - 22)

Service & Maintenance Record

For your protection, please ensure that this record is kept with your ALM and updated. When sending your ALM in for service, this record must be included.

Date of Purchase: _____
 ResQmax Serial #: _____
 Projectile Serial #: _____ Expiration Date: _____
 Projectile Serial #: _____ Expiration Date: _____
 Projectile Serial #: _____ Expiration Date: _____
 Projectile Serial #: _____ Expiration Date: _____
 Projectile Serial #: _____ Expiration Date: _____

	Service Location	Date	Signature of Certified Technician
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7			

Service Intervals

The service interval has been established based on the best data available to the manufacturer regarding the amount of use the equipment will receive while in service. However, units subjected to more frequent use, such as those in training programs, demonstrations, and / or commercial applications, or units subjected to rough use or severe climatic or environmental conditions may require more frequent service. Refer to page 30 for more information on service intervals.

It is the responsibility of the end-user of each unit to determine a service interval consistent with the amount of use and conditions under which this equipment is used, and to develop an appropriate maintenance protocol. Failure to establish an appropriate service interval will void the warranty, and may result in an event causing serious injury or death.

Limited Warranty

Rescue Solutions International Inc. warrants to the original owner, that if used, maintained and stored according to the manufacturer's recommendations, that the ALM is free from defects in material and workmanship for twelve (12) months from the date of the sale.

THIS WARRANTY IS LIMITED TO THE REPAIR AND REPLACEMENT OF PARTS AS NECESSARY, AND ANY NECESSARY LABOR AND SERVICES REQUIRED TO REPAIR OR REPLACE ANY PARTS TO RENDER THE DEVICE FREE OF DEFECTS. THE SOLE OBLIGATION OF RESCUE SOLUTIONS INTERNATIONAL, INC. SHALL BE THE REPAIR OR REPLACEMENT OF THE ALM AND UNDER NO CIRCUMSTANCES SHALL RESCUE SOLUTIONS INTERNATIONAL, INC., ITS AGENTS, SUCCESSORS, OR ASSIGNS, BE LIABLE FOR ANY DIRECT, CONSEQUENTIAL, OR OTHER DAMAGES ARISING OUT OF ANY CLAIMED DEFECT IN THE DEVICE OR THE METHOD OF ITS USE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHETHER RELATING TO FITNESS, MERCHANTABILITY, OR OTHERWISE.

Except as to the express warranty set forth above, the manufacturer disclaims any and all warranties and representations relating to the product. This limited warranty shall be governed by the laws of the State of Oregon.

If you have a problem with your ALM, call 541.504.9300 within 90 days of discovery of the problem. You will be given instructions on where to send your ALM for repair or replacement. If the problem is covered by this warranty, Rescue Solutions International, Inc. will repair or replace your ALM, or otherwise notify you, within 30 days of receipt of the ALM. Any actions for breach of warranty or breach of contract must be commenced within one year from the date of discovery of the breach.

Disclaimer

Rescue Solutions International, Inc. (RSI) has developed the ALM and all accessories in response to strong demand expressed by military, police, and special forces teams worldwide. This product was created to fill an existing need as indicated by personnel and organizations whose members and employees knowingly and consciously are routinely engaged in very high risk and often life-threatening activities in the ordinary course of the performance of their duties.

RSI manufactures this equipment for use by, and at the discretion of, professionals aware of the risks associated with the use of this type of equipment, and who are properly trained in its use. This manual is intended only to educate the user in various aspects of this specific equipment. This manual does not undertake to teach, train, encourage or condone any activities that may be associated with the use of this equipment. No equipment, brochure, manual or other materials produced by RSI, nor the offer for sale or the sale itself of this equipment, is intended to induce any individual or organization to put personnel at personal risk.

Rescue Solutions International, Inc. has no control over the training in the use of this equipment, the maintenance and servicing of this equipment, or the conditions under which this equipment is used. Rescue Solutions International, Inc. disclaims any and all responsibility for any liability arising out of the use of this equipment, however caused.

THIS PAGE INTENTIONALLY LEFT BLANK

Technical Specifications

ALM Launcher - Part # 540		
Specification	Measurement	
Length (Folding Stock Closed)	16.8 in	42.5 cm
Length (Folding Stock Open)	28.7 in	72.9 cm
Height (Folding Stock Closed)	13.2 in	21.6 cm
Height (Folding Stock Open)	8.5 in	33.5 cm
Width	4.1 in	10.3 cm
Weight	4.4 lbs	2.0 kg
Launcher Housing	Aluminum	
Color	Black	
Shape	Irregular	
Internal Mechanism	Stainless Steel	

Rope Options							
Material	Part #	Diam.	Minimum Break Load		Weight per Length		Length
			lbs	kg	lbs	kgs	
		(mm)					
Spectra	8031L	4	1,500	680	3.5	1.6	1,000 304
HMPE & Nylon	8011	7	5,780	2622	4.3	2.0	165 50
HMPE & Nylon	8021	5.5	3,200	1,194	5.2	2.6	330 100
Nylon	8151	8.4	3,442	1,565	7.7	3.5	230 70

Tactical Ladder Options				
Part #	Weight per Length		Length	
	lbs	kgs	ft	m
7441	5.8	2.6	50	15
7461	7.4	3.4	65	20

Side members are made of Nylon. Rungs are Fiberglass with non-slip Neoprene cover. Rungs are 12.0 in / 30.5 cm apart. The width of the ladders is 6.0 in / 15.0 cm. Minimum breaking load is 4,800 lbs / 1194kg. Safe working load is 730 lbs / 332 kg.

Filler Hose Assembly Part # 911-S; 912-S; 913-S		
Specification	Measurement	
Overall Length	42.8 in	108.6 cm
Hose Diameter	0.5 in	1.3 cm
Total Weight	2.2 lbs	1.0 kg
Overall Service Rating	5,000 psi	345 BAR
Hose Material	Nylon and Aramid	
Hose Finish	Black Urethane	
Filler Block Material	6061-T6 Aluminum	
Filler Block Finish	Black Anodized	
Bleed Screw	Stainless Steel and Nylon	
Adapters (DIN, SCBA, SCUBA)	Stainless Steel	

Projectiles												
Part	#	Length		Diameter		Weight		Material	Service Pressure		Cover Material	Cover Color
		in	cm	in	cm	lbs	kg		psi	BAR		
Standard Projectile	300-S	13.40	34.03	2.375	6.03	1.8	0.8	6061-T6 Al	3,000	204	Polyethylene	Black
Training Projectile	305-S 306-S	13.72	34.85	2.28	5.79	1.9	0.9	6061-T6 Al	3,000	204	High Density Urethane	Red or Florescent
HP Projectile	310-S	15.5	39.4	2.375	6.03	1.5	0.7	7000 Series Al	4,500	300	n/a	n/a

Projectiles have a black powder-coat finish.
Nozzles are Stainless Steel; Nozzle Protectors are black glass-filled nylon;

Miscellaneous Parts									
Part	#	Length		Width		Height		Weight	
		in	cm	in	cm	in	cm	lbs	kg
Grappling Hook	750	12.0	30.5	Irregular		Irregular		1.5	0.7
Grappling Hook is made of Heat Treated 6AL-4V Grade 5 Ti. Minimum Break Load is 2,200lbs/1,000 kg. Safe working load is 730 lbs / 330kg.									
Line Container - Compact	772	17.9	45.5	9.0	22.9	7.0	17.8	1.8	0.8
Line Container - Large	773	19.8	50.3	10.1	25.7	9.0	22.9	2.9	1.3
Line Containers are irregularly shaped and made of Polyethylene with a black finish. Hinges are Stainless Steel.									
Kit Bag	908	28.0	70.0	14.0	35.0	16.0	41.0	2.3	1.0
Kit Bags are black with reflective markings and are made of 1,000 Denier Cordura, Waterproof Vinyl, and Nylon.									
Transport/Storage Case	908	31.59	80.2	20.47	52.0	12.45	31.6	29.3	13.3
Transport/Storage Case	909	31.59	80.2	22.99	58.4	19.48	49.5	37.7	17.1
Cases are made of Copolymer with black finish.									

*Please note: All values are displayed as maximum, external measurements.

© 2010 Rescue Solutions International, Inc.



Phone: 541.504.9300
Fax: 541.504.9301
info@resqmax.com

www.resqmax.com

