



**GENESIS**<sup>™</sup>  
SERIES

**///MACH**  
SERIES

**HYDRAULIC RESCUE SYSTEMS**

# USERS GUIDE



**AMERICAN**  
RESCUE TECHNOLOGY INCORPORATED

240 Warren Street  
Dayton, Ohio 45402  
Tel. (937) 228-2200  
Fax. (937) 228-3300  
<http://www.art4rescue.com>  
e-mail: [amres@erinet.com](mailto:amres@erinet.com)

Thank you for choosing equipment from **American Rescue Technology**. We strive to give our customers the latest technology available in rescue products. From the newest lightweight alloys, to the most innovative designs in the industry. We continually update and refine our products in order to offer the highest quality equipment at a reasonable price. All of our **Genesis Series** spreaders and cutters are forged from aircraft grade aluminum alloy and protected with a hard anodize finish. The spreading tips and cutting blades are forged from shock resistant tool steel. All spreading and cutting tools are third party tested and ISO 9001 Quality Assurance Certified. At **American Rescue Technology** we feel we offer the highest quality rescue equipment available; so do our customers! Thank you again for choosing **American Rescue Technology**.

## General Maintenance

Following are the recommended service intervals for your new rescue equipment. By following these guidelines you will be assured many years of reliable service.

### After Each Use

- Wipe down all equipment to remove debris
- Clean male and female couplers
- Clean cutter blades and spreader tips
- Check whipends for damage
- Check spreader tips and cutter blades for damage
- Clean power unit hoses and check for damage
- Check hydraulic fluid level
- Add fuel if necessary
- Check engine oil level if applicable

### Weekly Inspection & Maintenance

We recommend running the tools weekly and doing the following checks.

- Check all couplers and fittings for tightness
- Run each tool and build full pressure
- Check handles and guards, tighten if necessary
- Check rollcage for damage
- Torque centerbolt on cutters and combination tools
- Check power unit hoses for tears and abrasions
- Clean fan intake and exhaust on electric motors

### Yearly Maintenance

We recommend having a yearly inspection and service done by a qualified American Rescue Technology technician.

- Cleaning, greasing and inspecting all tools
- Servicing hydraulic pump and drive source
- Pressure test system, adjust if necessary

## Mach Series Power Units

The **Mach Series** power units from American Rescue Technology come in many configurations. We use many types of drive sources, gasoline and electric being the most popular. Each of these drive sources come with their own manuals from the manufacturer. We recommend that you read these manuals and follow the suggested maintenance intervals.

The pump mechanism on the **Mach Series** power units require very little maintenance. We suggest changing the hydraulic fluid every 1 - 2 years, depending on the amount of use and conditions. (A dusty environment may require yearly changes.)

### Checking Fluid Level

Check the hydraulic fluid level regularly on all Mach Series power units. Low fluid levels can cause the tools to malfunction or to build up excessive heat. High hydraulic fluid levels can cause the pump to leak. On pumps equipped with a sight glass the level should be in the middle of the sight glass as shown below. On pumps without sight glasses the fluid level should be 1 1/2" - 2" from the top of the reservoir.



**Sight glass showing the proper level of hydraulic fluid when the power unit is on level ground.**

Reservoir bolts should be checked. Over time they may loosen due to vibration. This can cause leakage around the reservoir. Check the reservoir vent for blockage. It should be in the "vent" or "on" position during use.

## Genesis Series Spreaders

Your new Genesis spreader will provide you with many years of reliable service. All of the Genesis Series tools require little maintenance. We suggest following the guidelines as stated under the General Maintenance section of this guide. On a yearly basis disassemble, clean and grease all of the moving parts and linkage on the spreader arms. The spreader should also be pressure tested and adjusted if necessary. Any adjustments to the pressure settings should be done by a qualified American Rescue Technology technician.

### Cleaning Spreader Tips

When necessary, clean the spreader tips with a wire brush. Removing the dirt and metal particles from the surface of the tips allows the spreader to grip better during spreading operations. (See photo below)



**The clean tip on the right will grip better, reducing the chance of slippage during rescue operations.**

### Tip Placement When Spreading

The most important thing when using a hydraulic spreader is tip placement. The placement of the tips will determine how successful your spreading operation will be. Here are a few suggestions.

- Always look for a solid surface to spread against. Single layers of sheet metal usually tear. Look for folds, double thickness or formed areas to spread against.
- When spreading a nader pin, make the final spread with the tips near the flat head screws that mount the locking mechanism.
- NEVER spread with the tips on the heads of bolts. This will concentrate the force on a small area of the tips and could cause damage. (See photo below)
- Always insert the spreader tips as deep as possible. This will spread the force over a larger area and give a better grip.
- Always spread with the tips not the arms.



## Genesis Series Rams

As with the rest of the Genesis Series tools, the rams require very little maintenance. By following the General Maintenance guidelines on the previous page, the hydraulic rams will give many years of reliable service.

### Cleaning the Couplers

Below is a photo of a dirty female coupler. Dirty couplers allow dirt to get into the hydraulic system, requiring more frequent fluid changes. Dirty couplers are difficult to connect and lead to further complications. To clean a coupler, we recommend immersing it in hydraulic fluid and agitating it until the dirt is removed. Petroleum based penetrating oil will also work. (WD-40) These are available in sprays and are well suited for field use.

**Clean dirty couplers with hydraulic fluid or a light penetrating oil like WD-40.**



### Ram Accessories

The hydraulic rams come with a standard pushing head. A ram accessory kit is also available. This kit contains some special purpose heads, chain pulling attachments and extensions. Following are some things to consider when using hydraulic rams.

- Always make sure the ram accessory is fully threaded to the rod. Failure to do so may bend or strip the threads.
- NEVER use more than one extension on a ram.
- Watch the ram head and base when pushing. If the ram “kicks out” it could further injure the patient or a rescuer.
- When performing a “dash roll-up” keep the control valve to the outside of the vehicle.
- When pulling with a ram, always pull in a straight line. Pulling at an angle could bend the ram rod.



## Genesis Series Cutters & Vario Tools

Of all the tools in your new Genesis Rescue System, the cutter requires the most care and maintenance. Following the General Maintenance recommendations on the previous page will keep your cutter working reliably for many years.

### Cleaning & Inspecting Blades

When necessary clean the cutter blades with a wire brush. This will reduce the amount of contaminants that get into the moving parts of the blades and linkage. The blades and linkage should be cleaned and greased at least once a year.

After each use we recommend inspecting the blades for damage. Damage can occur during rescue operations for many reasons. Check along the cutting edge of the blades for knicks or gouges. These can usually be filed smooth. Bent blades or major blade failures require replacement. Call the dealer or American Rescue Technology.

### Tightening the Center Bolt

The most common cause for blade failure is a loose center bolt. The center bolt is the bolt that goes through both blades and acts as a pivot point. The center bolt torque should be checked after heavy use. The chart below gives the proper torque setting.

<b>C-30 Mini Cutter</b> -----	<b>80 ft-lbs</b>
<b>C-90 Cutter</b> -----	<b>90 ft-lbs</b>
<b>C-140 Cutter</b> -----	<b>90 ft-lbs</b>
<b>C-150 Cutter</b> -----	<b>120 ft-lbs</b>
<b>C-180 Cutter</b> -----	<b>120 ft-lbs</b>
<b>13c Vario</b> -----	<b>120 ft-lbs</b>

If the cutter is twisting excessively when cutting, the problem may be a loose center bolt.

## Blade Placement When Cutting

When cutting with a hydraulic cutter be aware of what your cutting. Following these guidelines will keep your cutter working in top condition.

- Always wrap around the piece to be cut. (See photo below left)
- Cut as close to the pivot point as possible. This is where the cutter has the greatest power.
- BEWARE, loose ends may “launch” when cut.
- Always cut perpendicular to the blades. (See photo below right)
- Puncture cuts should only be made in sheet metal.
- Cut normal rescue obstacles. DO NOT cut leaf springs, coil springs, trailer hitches, tie rods, axles . . . these could damage the cutter.
- When cutting door hinges, cut to either side of the hinge pin. Wedging the pin between the blades could cause damage.



Wrap the blades around the piece to be cut. This will reduce the chance of damaging the blades.



The proper way to cut. The blades are perpendicular to the piece being cut.

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## TROUBLESHOOTING

### Problem

**Pump is leaking hydraulic fluid.**

Hydraulic fluid is coming out the back of the tool

**Tools are running backwards**

Tools have lost power

**Tools are running slow**

Our hoses have cuts and abrasions and the wire braids are exposed.

**Fittings or couplers leaking**

### Action

**Fluid level too high. Air vent clogged or not open**

Couplers on backward. Bad coupler or coupler not connected properly

**Check couplers, one set is on backwards.**

Pressure test pump and tools. Have adjusted if necessary.

**Check filters in pump and control valve in tools.**

**Clean or replace. Check flow restrictor for blockage.**

The hoses can be used but should be replaced before the wire starts to corrode.

**Use a wrench to tighten.**

**BEFORE DISASSEMBLING ANY TOOLS CONTACT YOUR DEALER OR AMERICAN RESCUE TECHNOLOGY**