

We are pleased you have purchased the AMKUS RESCUE SYSTEM. Please follow the suggested maintenance instructions contained in this manual, and the equipment will serve you well for many years.

If you have any comments or questions after putting the equipment into service, feel free to contact us. We value your opinion, and we want to keep you as a satisfied customer.

**Kyle B. Smith, President**

# Set Up Instructions and Routine Maintenance for Power Units

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## To Our Customer

Normally, AMKUS equipment is prepared and serviced by your dealer prior to delivery. If, however, this is not your first piece of AMKUS rescue equipment, or your department has decided to service the equipment itself, review the enclosed instructions carefully prior to placing the unit in service.

Remove equipment from the packing cartons and carefully inspect for damage. Damage that occurs during shipment should be reported immediately to the carrier.

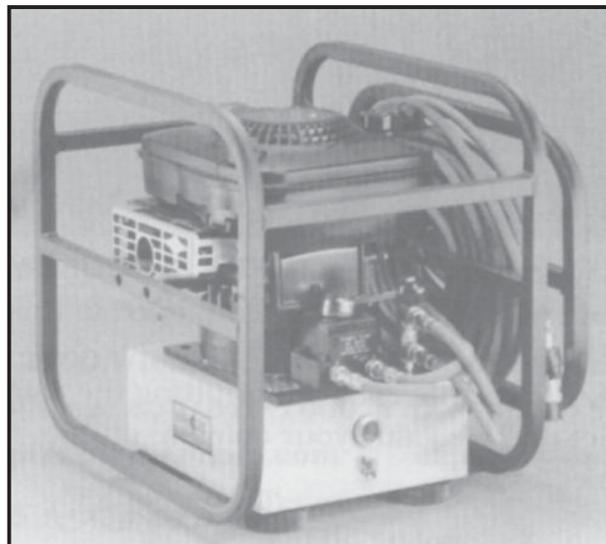
Check all hydraulic fittings for tightness. Pour two gallons (approx. 8 liters) of AMKUS hydraulic fluid into the reservoir. Caution - use only AMKUS hydraulic fluid in all AMKUS equipment. Install the vented reservoir filler cap and its rubber gasket.

Check the gasoline engine for engine oil which is normally installed initially by the manufacturer of the engine. Fill the fuel tank with appropriate fuel. Use unleaded gasoline.

Connect the hydraulic couplings on each of the hose lines provided to a hydraulic rescue tool. The male and female connection on the hydraulic hose lines leading from the hydraulic pump should be connected to the corresponding male and female couplings on the hoses connected to the tools.

Now start the engine; and allow it to idle for a few minutes. Engage each hydraulic line, either alternately or simultaneously, as appropriate for your power unit.

Allow the fluid to circulate for several minutes. This purges air from the hydraulic hoses and the entire system. Re-check the hydraulic fluid level through the sight gauge provided on the front of the hydraulic fluid reservoir (as shown below). Hydraulic fluid need only be visible in the window. Do not over fill.



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It is not necessary for hydraulic fluid to completely fill the sight gauge window. If your hydraulic reservoir does not have a sight gauge provided, the fluid level should be approximately two inches (five centimeters) from the top of the reservoir. Overfilling the hydraulic fluid reservoir will result in excess leakage.

Your hydraulic tools are now ready to use.

Operate each tool from its fully open to its fully closed position to assure normal functioning.

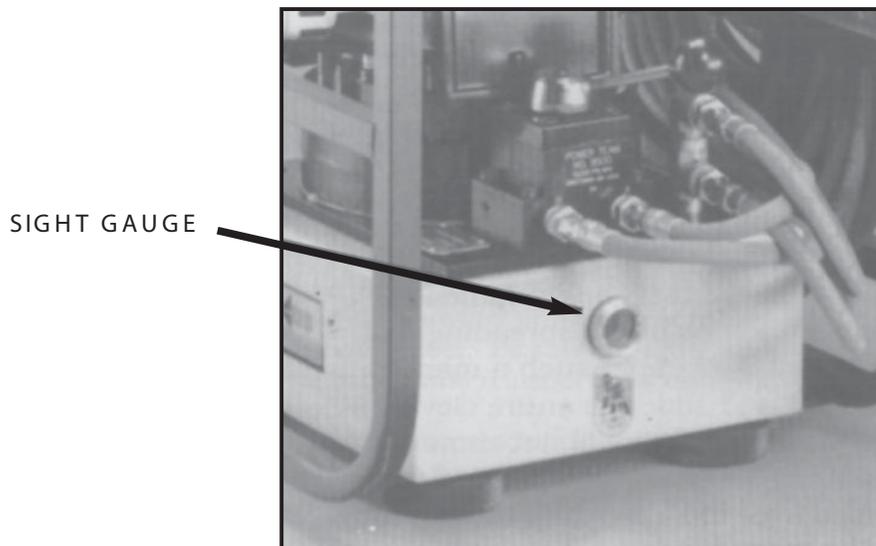
### Routine maintenance for Gasoline Engine Power Units

Gasoline engines should be serviced in accordance with the manufacturers suggested maintenance requirements as outlined in the owners manual provided with your particular power unit.

Oil change, air filter cleaning and tune up adjustments should be done as recommended by the manufacturer. All gasoline engines can be serviced by local, authorized small engine repair centers.

Periodically inspect and tighten all hydraulic fittings. While a filter is provided in the hydraulic reservoir, hydraulic fluid should be changed after approximately every twenty hours or two years of operation. The easiest way to drain the hydraulic fluid is to remove the male coupling from the hose and operate the pump until the fluid flow becomes intermittent. Caution, do not continue to operate the pump after draining fluid. Dispose of the unused hydraulic fluid properly.

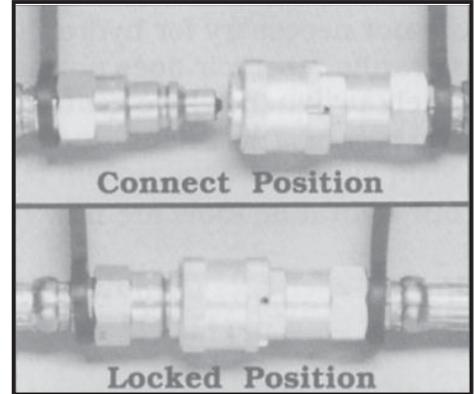
AMKUS recommends that every four years the hydraulic pump assembly be removed, the reservoir thoroughly cleaned, and the pump filter screen replaced. This maintenance should be performed by an authorized AMKUS service center.



# Set Up Operations

## Operation of the Quick Couplings

It is recommended that tools be connected to their appropriate hoses before starting the power unit. To connect, rotate the sleeve on the locking female coupling until the locking pin lines up with the notch. Pull back on the sleeve and insert the male coupling into the female coupling, then release the sleeve. Rotate the sleeve end to insure that it is locked.



## Operation of the Three Position, Four Way Valve

Center position of the valve is a neutral position and neither of the tools connected to the hoses will operate. Switching the valve to the right will direct the hydraulic fluid down the right set of hoses and operate whichever tool is connected to that set of hoses. Switching the valve to the left will direct the flow of hydraulic fluid to the left set of hoses and will operate whichever tool is connected to that set of hoses. Repositioning the valve to the center position will remove pressure from both hoses.

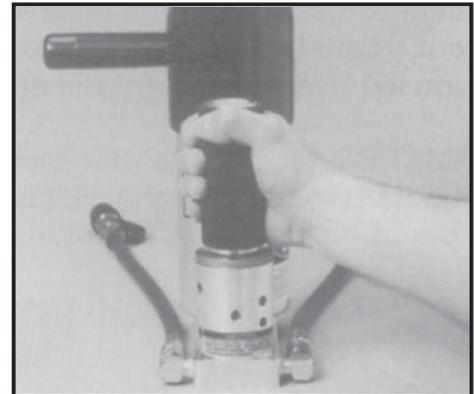
Simultaneous operation power units are equipped with two valve handles, one for each hose line. When turned to the side, no fluid flows through the hose. When turned toward the front of the unit, the corresponding hose line is engaged.

It is always a good idea to make sure rescue tools have been connected to the hoses before you switch the valve in either direction.



## Operation of the Control Valve

All AMKUS rescue tools are equipped with a twist grip type control valve. To operate the valve, twist to the right or left, appropriate to the movement you desire from your rescue tool. All control valves are equipped with a dead man's type feature, which causes them to automatically spring back to center as soon as the handle is released. The tools will then stop and hold whatever pressure they were exerting at the time the valve was released.

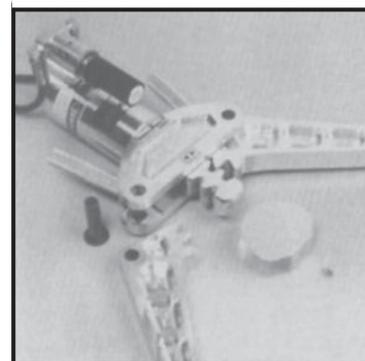
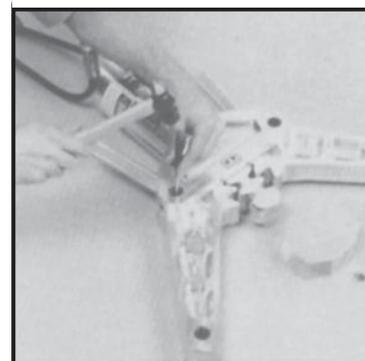
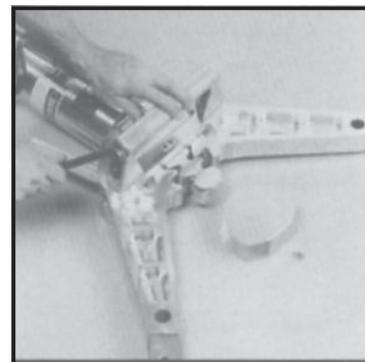
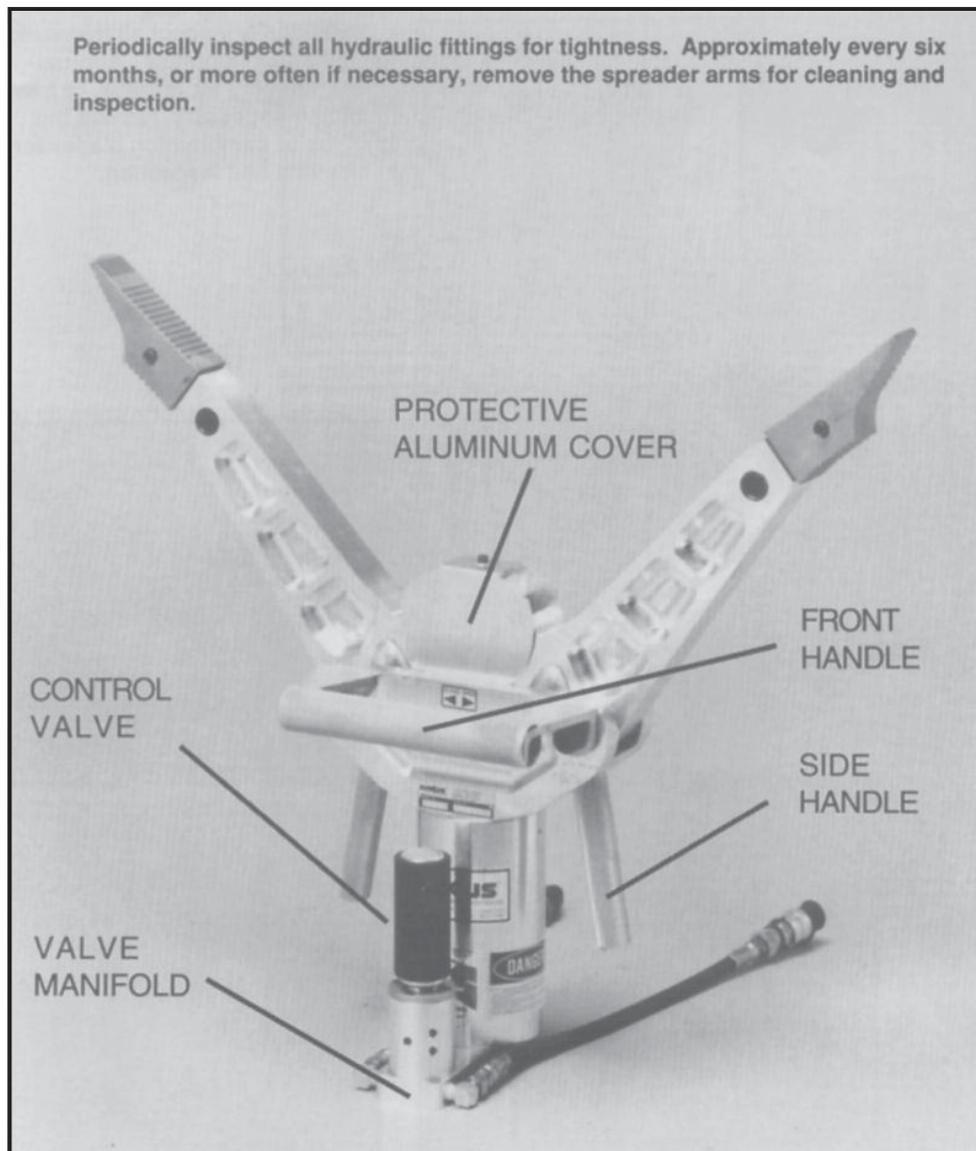


## Operation of the Chain Package

The chain package can be attached to the hydraulic spreader arm without any special tools or equipment. There is no need to remove the tips of the spreading tool. The specially designed U-bolt is made in such a manner that you simply pull the pin and slide the entire clevis over the spreader arm. The clevis bolt will not come out completely, thus eliminating the possibility of loss. Once the clevis has been placed over the arm, drop the pin into the hole in the arm of the spreader and hand tighten.



## Routine Maintenance for Model 30 CX Hydraulic Spreader



Removal of the spreader arms is most easily accomplished by opening the spreader arms to the near full open position (as shown above). Remove the protective aluminum rack cover. Remove the large socket head cap screws which secure the front handle to the spreader bracket. Tap out the pivot pins using care not to damage the interior threads. Each arm will now lift out of the spreader bracket.

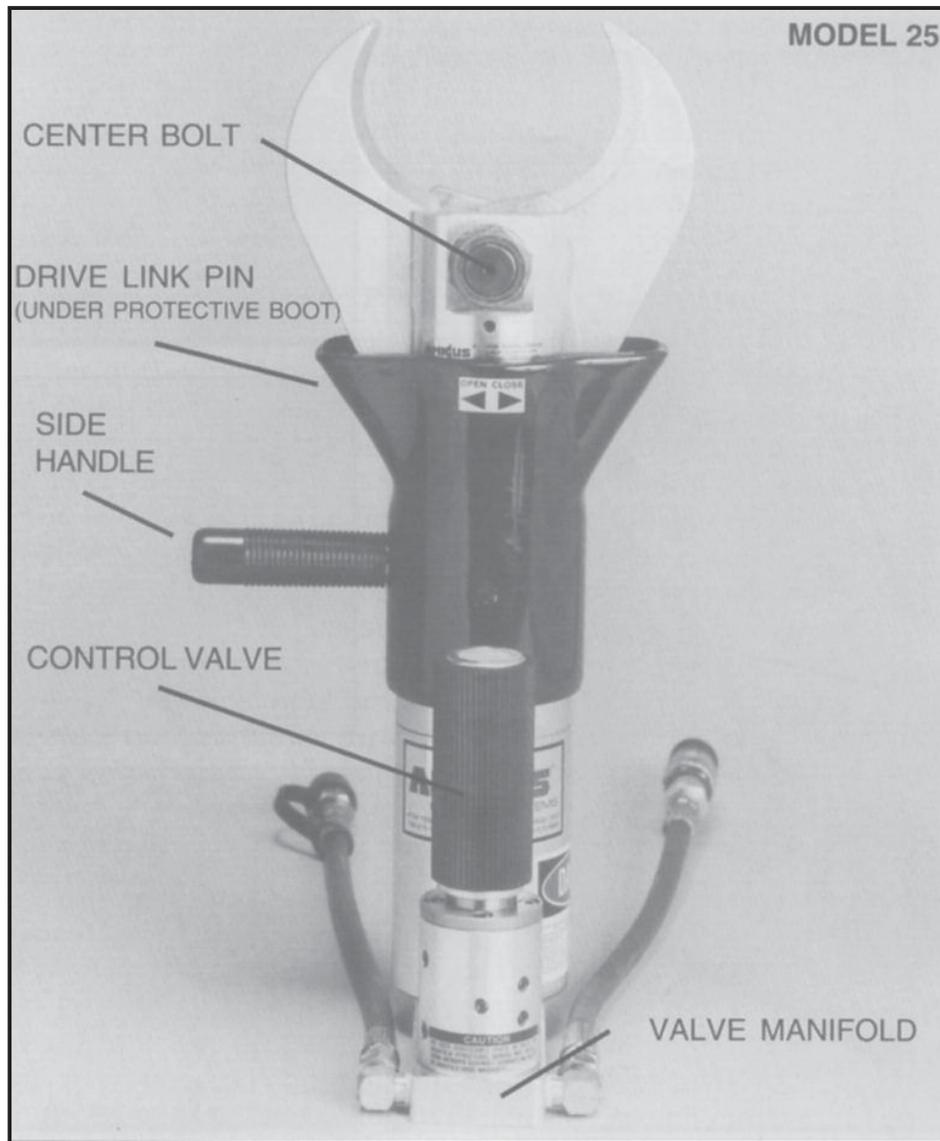
Clean away any dirt or grease and inspect the spreader arms and rack for any signs of excess wear or damage. Clean and inspect the exposed portion of the rod and the teeth of the spreader rack.

Now apply clean, fresh, white lithium grease to the teeth of the spreader rack, the teeth of the spreader arm, the pivot pin holes, and the sides of the spreader arm adjacent to the teeth.

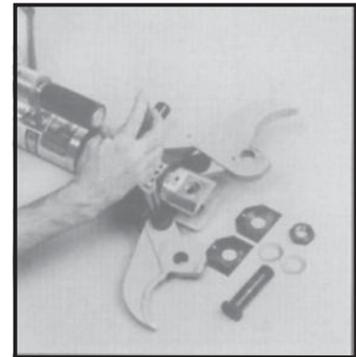
You are now ready to re-assemble the spreader. Be sure the arms engage evenly on both sides and re-insert the pivot pins. Reposition the handle and reinstall the socket head cap screws. Tighten the bolts securely. Re-install the aluminum rack cover.

Periodically check the socket head cap screws which hold the control valve to the valve manifold and the valve manifold to the hydraulic cylinder. These screws are installed securely at the factory but occasionally will loosen because of excess vibration while being transported on moving vehicles.

## Routine Maintenance for Model 25, 25S, 25P, 25L, 25E Cutters, and 25C



Periodically inspect all hydraulic fittings for tightness. Approximately every six months, or more often if necessary, remove the cutter or combination blades for cleaning and inspection.



Removal of the blades is most easily accomplished by closing the blades (the opposite of the blade position shown above) until the drive link pin retaining rings are easily accessible.

Loosen the center bolt. If your tool is equipped with a two-piece disc lock washer beneath the nut, loosening the center bolt is most easily accomplished by turning the bolt while holding the nut. If your tool has a single lock washer, loosening the nut will accomplish the task. The center bolt can then be driven out, being careful not to damage the threads. Now remove the retaining ring from the drive link pin for each blade. The blades will now come out of the body.

Clean and inspect each blade for signs of excess wear or damage. (Damaged blades may need to be replaced.) Clean inside the body as well. Remove the friction plates and clean away excess grease and dirt.

Lubricate the blades with white lithium grease in the area around the center bolt and hole, and where friction occurs with the friction plates. Lubricate and reinstall the friction plates on the tension pins and position each blade independently.

Re-attach the drive link pin and its retaining ring first. Note that the pins are installed in opposing directions. The head of the drive link pin should fit into the counterbore on the drive link. Then swivel the blades into position, line up the hole with the center bolt, and reinstall the center bolt. The center bolt should be inserted from the bottom side of the cutter.

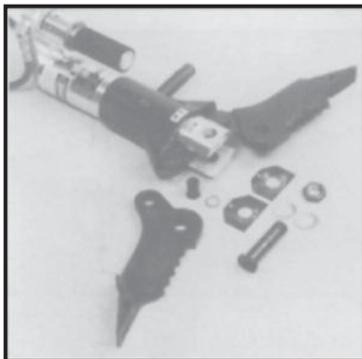
## Combination Tool

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25 S



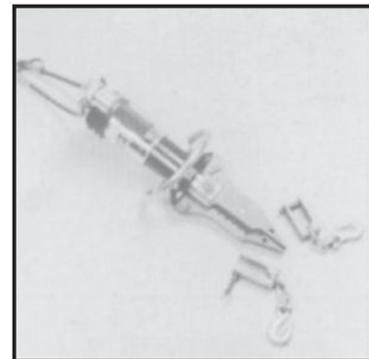
25 P



25 C



25 C Blades



C chain Package for 25C and C 15

The center bolt can then be tapped back into place, locking washers and nut installed, and the bolt tightened securely. The bolt should be tightened until no light can be seen indicating space between the blades as they cross (approximately 120 ft/lbs. or 16.6 kg/M). Because the bolt may be subject to periodic stretch, it should be inspected after each use to insure that no gap exists between the blades. Do not tighten excessively.

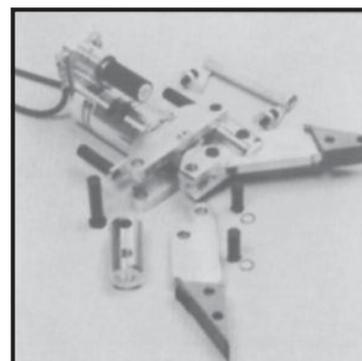
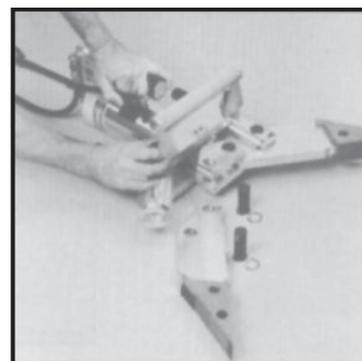
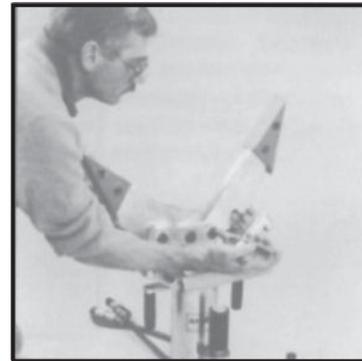
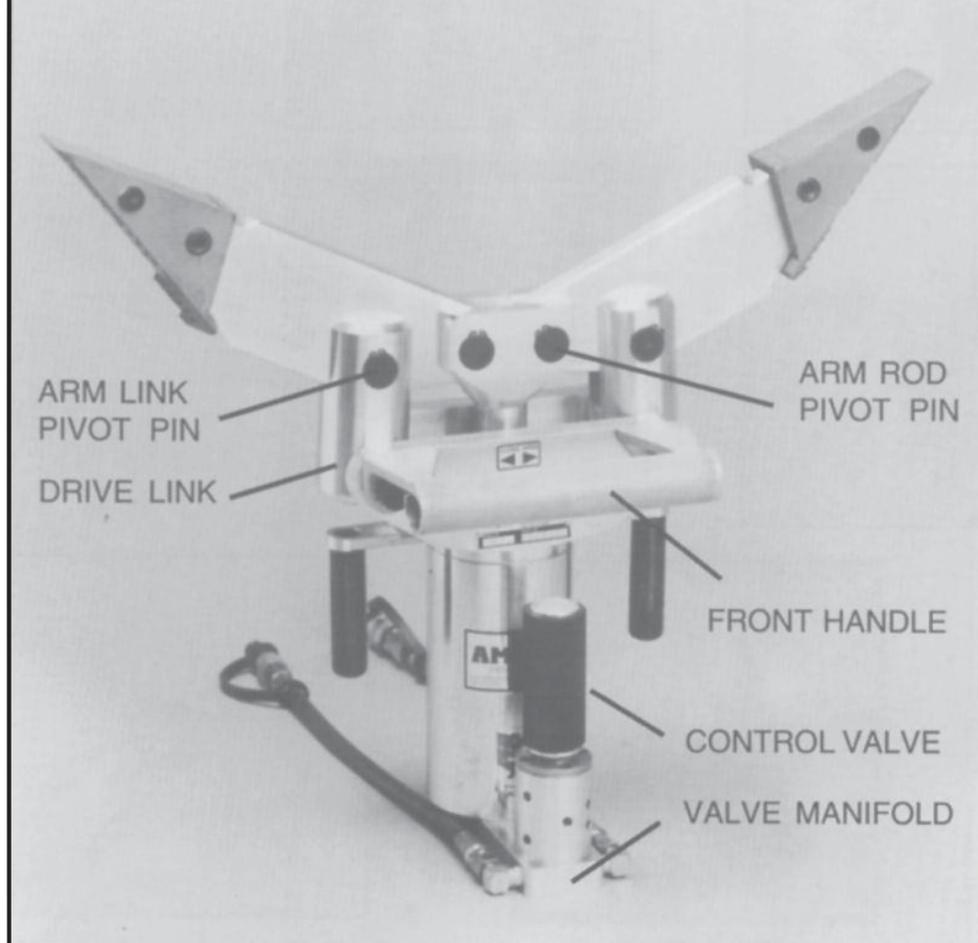
The blades on the AMKUS cutters and combination tools have been proven effective for cutting steering columns, brake pedals, nader bolts, and other such items as may be necessary for extrication. When cutting care must be taken to insure that the tips of the blades have a clear path of travel. The blades are not unbreakable, and should not be used to cut hardened items such as tie rods, leaf springs, or spindles. Excessive nicks and damage to the blades could result in blade failure.

Additionally, the hydraulic cutter is not intended as a piercing tool for heavy metal. It will pierce the sheet metal body of most automobiles with no problem, but care must be taken to avoid the heavy metal backing plates behind seat belt mounts, door hinges, and nader bolts or locks.

Periodically check the socket head cap screws which hold the control valve to the valve manifold and the valve manifold to the hydraulic cylinder. These screws are installed securely at the factory but occasionally will loosen because of excess vibration while being transported on moving vehicles.

## Routine Maintenance for Model 28 Spreader

Periodically inspect all hydraulic fittings for tightness. Approximately every six months, or more often if necessary, remove the spreader arms for cleaning and inspection.



Removal of the spreader arms is most easily accomplished by operating the tool to open the arms to their near full open position (as shown above).

First remove the retaining rings from the arm/link pivot pins. Then remove the retaining rings from the arm/rod pivot pins. Once the pins have been removed, the arms can be removed from the spreading tool. Note: The arm/link pivot pin is the longer of the two pins.

Remove the large socket head cap screws which secure the front handle to the spreader bracket. Tap out the drive link pivot pins using care not to damage the interior threads. You can now remove the drive links.

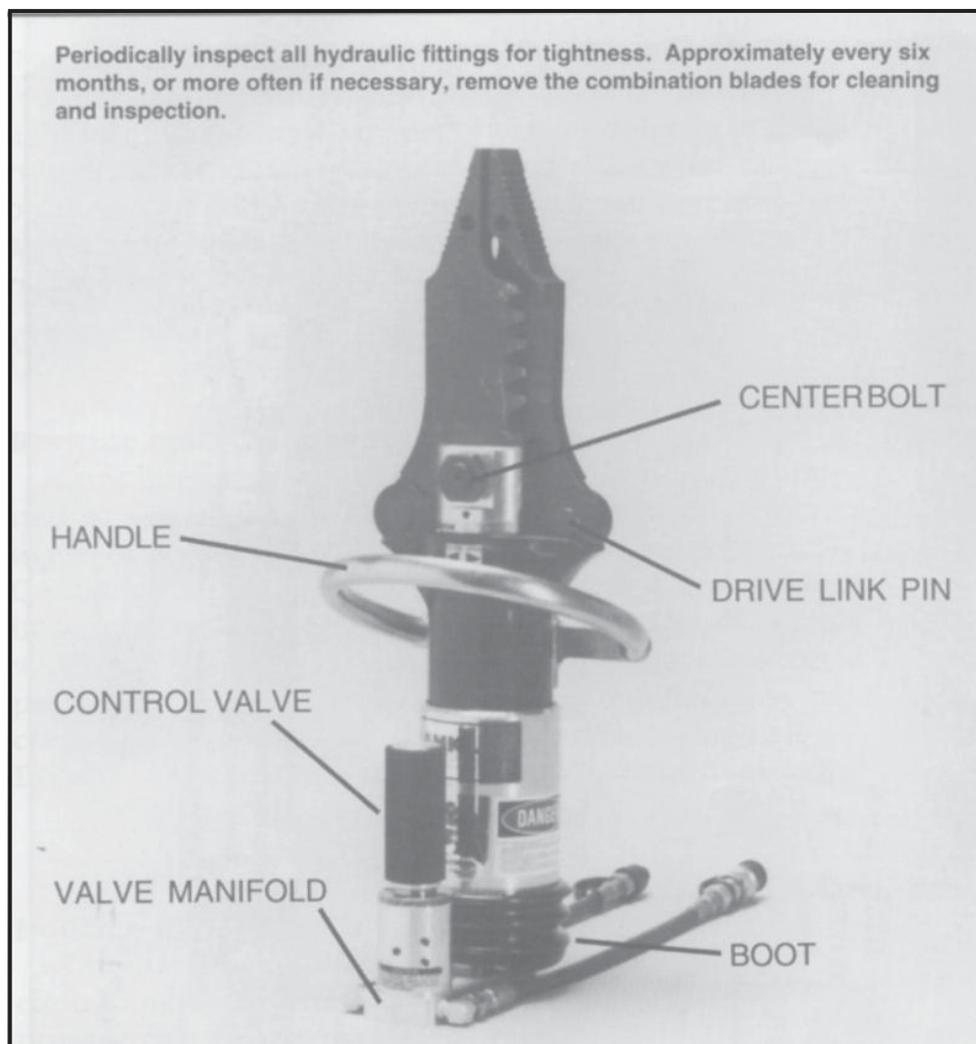
Clean away any dirt or grease and inspect the spreader arms and the drive links for any signs of excess wear or damage. You should also clean and inspect the exposed portion of the rod.

Now apply clean, white lithium grease to the drive links where they articulate with the bracket, to the links where they articulate with the arms, to the holes for both the arm/rod pivot pin and the arm/link pivot pin, and to the arms where they articulate with the rod.

Re-assemble by inserting the drive link pivot pins and reinstall the socket head cap screws through the cross handle. It is generally easier to re-install the arm if you install the short pins (the arm/rod pivot pins) and their retaining rings first. Next install the longer pins (the arm/link pivot pins) into the links and then install their retaining rings.

Periodically inspect socket head cap screws which mount the control valve to the valve manifold and the valve manifold to the hydraulic cylinder. These screws are installed securely at the factory but occasionally will loosen because of excess vibration while being transported on moving vehicles.

## Routine Maintenance for Model C 15 Combination Tool



Removal of the blades is most easily accomplished by closing the blades until the drive link pin retaining rings are easily accessible (as shown above).

Loosen the center bolt. If your tool is equipped with a two piece disc washer beneath the nut, loosening the center bolt is most easily accomplished by turning the bolt while holding the nut. If your tool has a single lock washer, loosening the nut will accomplish the task. The center bolt can then be driven out, being careful not to damage the threads. Now remove the retaining ring from the drive link pin for each blade. The blades will now come out of the body.

Clean and inspect each blade for signs of excess wear or damage. (Damaged blades may need to be replaced.) Clean inside the body as well. Remove the friction plates and clean away excess grease and dirt.

Lubricate the blades with white lithium grease in the area around the center bolt and hole, and where friction occurs with the friction plates. Lubricate and reinstall the friction plates on their locating pins and position each blade independently.

Reattach the drive link pin and its retaining ring first. Note that the pins are installed in opposing directions. The head of the drive link pin should fit into the counterbore on the drive link. Then swivel the blades into position, line up the hole with the center bolt, and reinstall the center bolt. The center bolt should be installed from the bottom side of the tool.

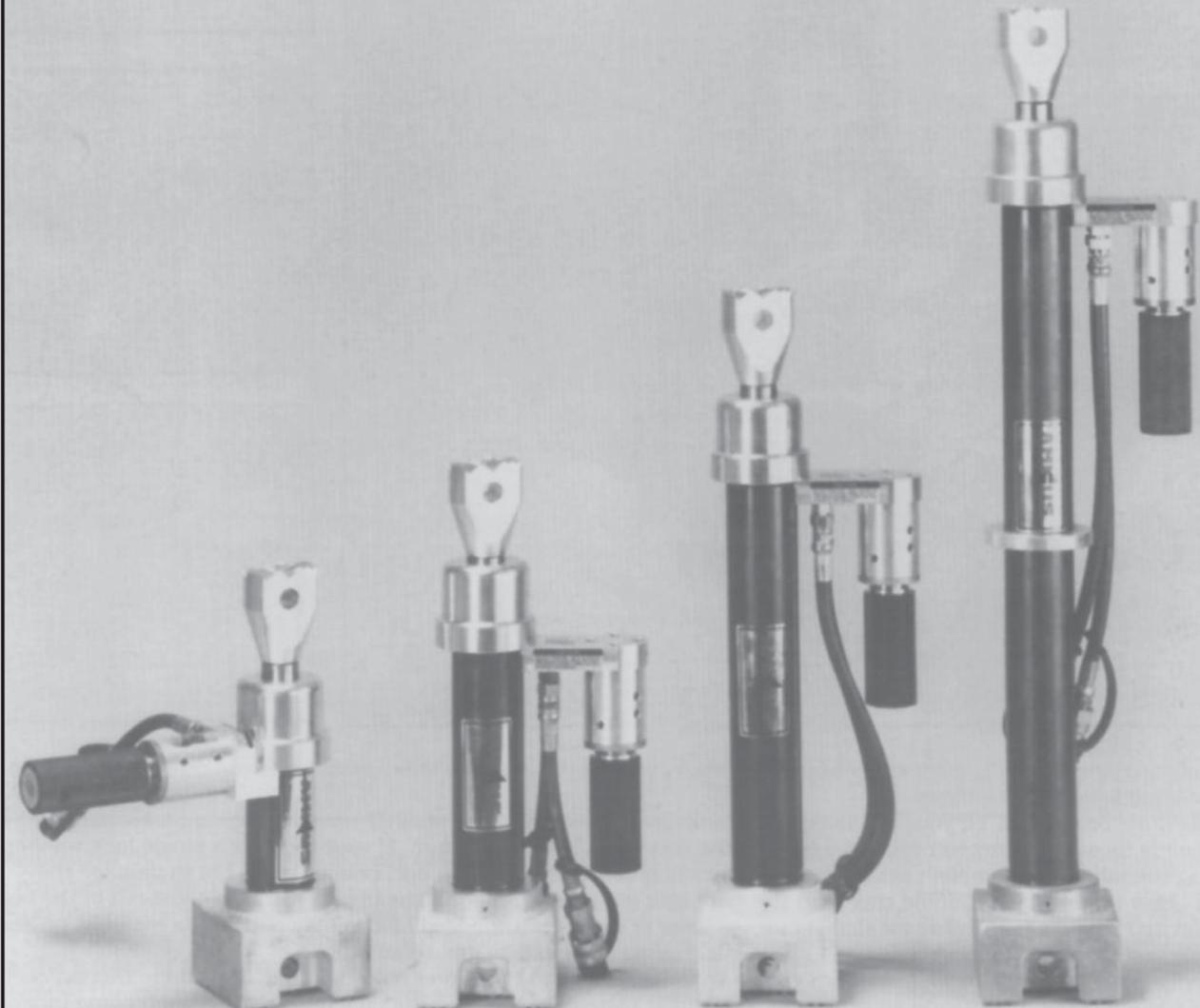
The center bolt can then be tapped back into place, locking washers and nut installed, and the bolt tightened securely. The bolt should be tightened until no light can be seen indicating space between the blades as the cross (approximately 120 ft/lbs or 16.6 kg/M). Because the bolt may be subject to periodic stretch, it should be inspected after each use to insure that no gap exists between the blades. Do not tighten excessively.

Peel back the rubber boot which covers the rod as it extends from the back of the cylinder. Clean any dirt or contaminants from the boot and rod area. No lubrication is necessary as the rod is lubricated by the hydraulic fluid.

## Routine Maintenance for Hydraulic Rams

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Periodically inspect all hydraulic fittings for tightness. Clean excess dirt away from the area where the rod reenters the cylinder.

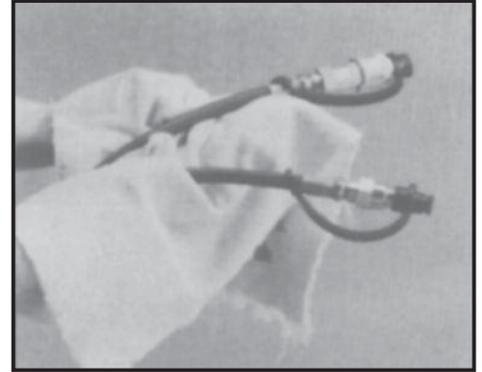


Periodically check the socket head cap screws, which mount the control valve to the valve manifold, and the valve manifold to the cylinder cap. These screws are installed securely at the factory but occasionally will loosen because of excess vibration while being transported on moving vehicles.

Because the cylinder rod is lubricated by the hydraulic fluid and wiped clean using a unique T-seal O-ring, no lubrication is necessary for the AMKUS hydraulic rams.

### Routine maintenance for Hydraulic Hoses

After each use hoses should be wiped clean with a light cleaning solvent. Inspect hose for damage to the rubber jacket. Damage which exposes the wire braided core subjects the wire to corrosion and may weaken the hose. Heavily damaged hoses should be replaced.



### Routine maintenance for Couplings

Couplings should be kept clean of dirt and contaminants. Couplings may be most easily cleaned by immersing in or scrubbing with a standard cleaning solvent. Couplings should then be lubricated with a non-water based lubricant such as WD-40®. The rubber dust caps which are provided with the tools should also be cleaned periodically. Be aware that while the couplings may be clean, the dust caps will accumulate dirt during use. Do not cover a clean coupling with a dirty dust cap.



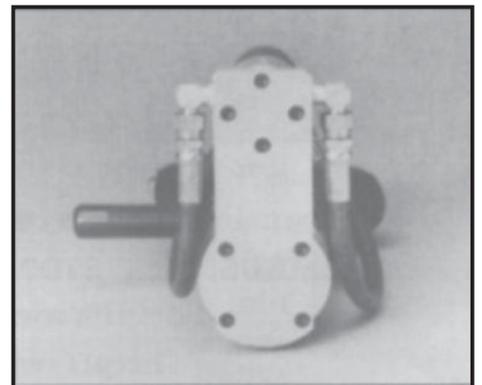
### Routine maintenance for Chains

Chains should be kept clean. Wipe with a rag containing a small amount of light machine oil to prevent rusting. Care should be taken to insure that damage does not occur to the threads of the clevis bolt. Chains should be used for rescue purposes only.



### Routine maintenance for Cap Screws

Periodically check the socket head cap screws, which mount the control valve to the valve manifold (5mm), and the valve manifold to the cylinder (3/16"). These screws are installed securely at the factory but occasionally will loosen because of excess vibration while being transported on moving vehicles.



**AMKUS RESCUE SYSTEMS**  
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