

Operator's Manual Pipe Grapple



800-821-7563

www.ArrowMHP.com

Pipe Grapple Operation and Maintenance Manual

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MODEL NUMBER:	_____
SERIAL NUMBER:	_____
	(Located on data plate attached to top of unit)
DATE PURCHASED:	_____

INTRODUCTION

SYMBOLS USED IN THIS OWNER'S MANUAL

Throughout this owner's manual (and on the attachment itself) there are universal safety symbols. They are commonly used in the equipment and attachment manufacturing industries. These symbols are meant to alert users to possible dangers when used the attachment. Please pay careful attention to any section of this owner's manual with one of these symbols.



**Read
Owner's
Manual**



**General
Warning
Hazard/Alert**



**Do Not Put
Hand In This
Area**



**Flying
Objects**



**Pressurized
Hydraulic
Fluid**

BEFORE INSTALLATION AND OPERATION:



Be sure to read this owner's manual and understand its contents prior to installation and operation of the Arrow Pipe Grapple. If there is anything in this manual you do not understand, please contact your authorized dealer, or the Arrow Customer Service Team at 913-495-4803. We will be glad to answer your questions.

ARROW Material Handling Products cares about your safety, and the safety of others who operate or are in the vicinity of the Pipe Grapple attachment. ARROW takes great pride in engineering and building quality attachments with the operator's safety in mind, but the responsibility for the safe use of this attachment ultimately belongs to the operator.



Never let anyone operate the ARROW Pipe Grapple attachment unless they have first read this owner's manual.

SPECIAL NOTE: The information and illustrations contained in this ARROW Pipe Grapple Owner's manual were current at the time of publication. ARROW Material Handling Products reserves the right to redesign all or any portion of this attachment and the owner's manual at any time without notification. For questions or concerns, or to inquire about updates, please contact your authorized dealer or the Customer Service Team at 913-495-4803.

SAFETY PRECAUTIONS



GENERAL SAFETY PRECAUTIONS

ARROW Material Handling Products wants users to have many years of safe, low-maintenance use from the ARROW Pipe Grapple attachment. Please read the following section regarding safety thoroughly and follow all precautions each time the ARROW Pipe Grapple attachment is used.



1. Follow safe operating procedures:

- Operate the loader from the operator's compartment — never from the outside.
- Stay seated when operating the loader controls.
- Work with the seat belt fastened.
- When possible, plan to load, unload, and turn on level ground.
- Travel and turn with the attachment in the lowest position possible.
- Operate on stable surfaces only.
- Do not travel across slopes. Travel straight up and down slopes, with the heavy end of the machine pointed uphill.
- Keep bystanders away from the work area.
- Never disable safety devices.



2. Enter and exit from the loader safely:

- Enter the loader only when the attachment is flat on the ground.
- When entering the loader, face the seat and keep a three-point contact with handholds and steps.
- Never use foot or hand controls as steps or handholds.
- Keep all walking and working surfaces clean and clear.
- Before leaving the operator's seat:
 - lower the attachment flat to the ground,
 - set the parking brake, and
 - turn off the engine.



3. Maintain the machine in safe operating condition:

- Follow the manufacturer's instructions.
- Keep the foot controls free of mud, ice, snow and debris.
- Regularly inspect and maintain:
 - Interlocked controls
 - Seat belts
 - Restraint bars
 - Side screens
 - Rollover protective structures (ROPS)
 - Falling object protection structure (FOPS)
- NEVER modify or bypass safety devices.
- If you must perform service under a raised attachment, use the lift arm supports.



SAFE OPERATION

Safe operation of a machine with this pipe grapple attachment is the responsibility of the operator (ITSDF B56.6-2011 paragraph 6.1.1). Such operators must have specific training in the safe operation of the machine, and it is required that the training is well documented and covers all of the requirements of ITSDF B56.6 Part II. Documented training is a critical component to a well-designed, and OSHA compliant, safety program. All ITSDF standards are available for free download from www.itsdf.org.



SAFELY CHECKING FOR HYDRAULIC LEAKS

WARNING: There is significant risk of injection from the high pressure spray at hydraulic leaks.



- The energy used to operate the machine and attachments can be stored in the hydraulic system, even when the machine engine is off.
- Serious injuries from hydraulic fluid injection can seem insignificant at first. Often it can seem like a pin prick or tingling, but later it may require amputation.

HIGH PRESSURE LEAKS ARE OFTEN INVISIBLE.

- Hydraulic system injuries can include:
 - Burns from hot fluid
 - Injection of hydraulic fluid
 - Trauma from energized components or flailing lines

DO



- Always Lock Out, Tag Out machine controls before working on the machine or attachment.
- Always use the methods recommended by the manufacturer to block lift arms and other moving components, to prevent accidental movement.
- Always use appropriate PPE (Personal Protective Equipment) when working on or around machinery.
- Take an approved safety course related to hydraulic systems. Local university extension programs and equipment dealers may offer training on hydraulic safety.

DO NOT



- **DO NOT** use hands, or other body parts, to inspect for hydraulic leaks. Instead, use a piece of paper or wood.
- **DO NOT** place hands or other body parts in pinch points when the machine has not been properly blocked and locked out.
- **DO NOT** “crack” a hydraulic fitting to release hydraulic pressure. Severe risk of injection.
- **DO NOT** tighten or loosen hydraulic components when the system is pressurized.
- **DO NOT** assume that the system is depressurized.

INSTALLATION

Adding this attachment to a rough terrain forklift

- Per ITSDF B56.6-2011 paragraph 5.2.1:
 1. Written approval of the original truck manufacturer or its successor must be obtained prior to use.
 2. Capacity plates, decals, tags, and operation and maintenance manuals must be updated to reflect the installation of this attachment
- Per ITSDF B56.6-2011 paragraph 5.2.3:
 1. The user shall see that the truck is marked to identify the pipe grapple attachment
 2. Show the approximate weight of the truck and pipe grapple combination
 3. Show the capacity of the truck with the pipe grapple at maximum elevation with load laterally centered

Connecting the attachment to the machine

- **Quick hitch (as shown in Figure 1):**
 1. Disconnect any attachments that may be on the machine
 2. Roll the machine coupler forward slightly
 3. Approach the pipe grapple slowly and position the top of the machine coupler into the hooks on the pipe grapple hitch plates
 4. Once the machine coupler is seated into the hooks, roll the machine coupler back until the latch pins line up with the pin holes on the pipe grapple hitch
 5. Install the latch pin(s)
- **Pin-on**

Follow the machine manufacturer's instructions for removing and installing pin-on attachments.



Ensure that all pins, keepers, hooks, etc. are properly engaged or installed prior to operating the machine with a pipe grapple.

Connecting the hydraulic lines.

- Two hydraulic lines are provided on the top left corner of the pipe grapple. These lines need to be connected to the auxiliary hydraulic outputs on the machine boom.

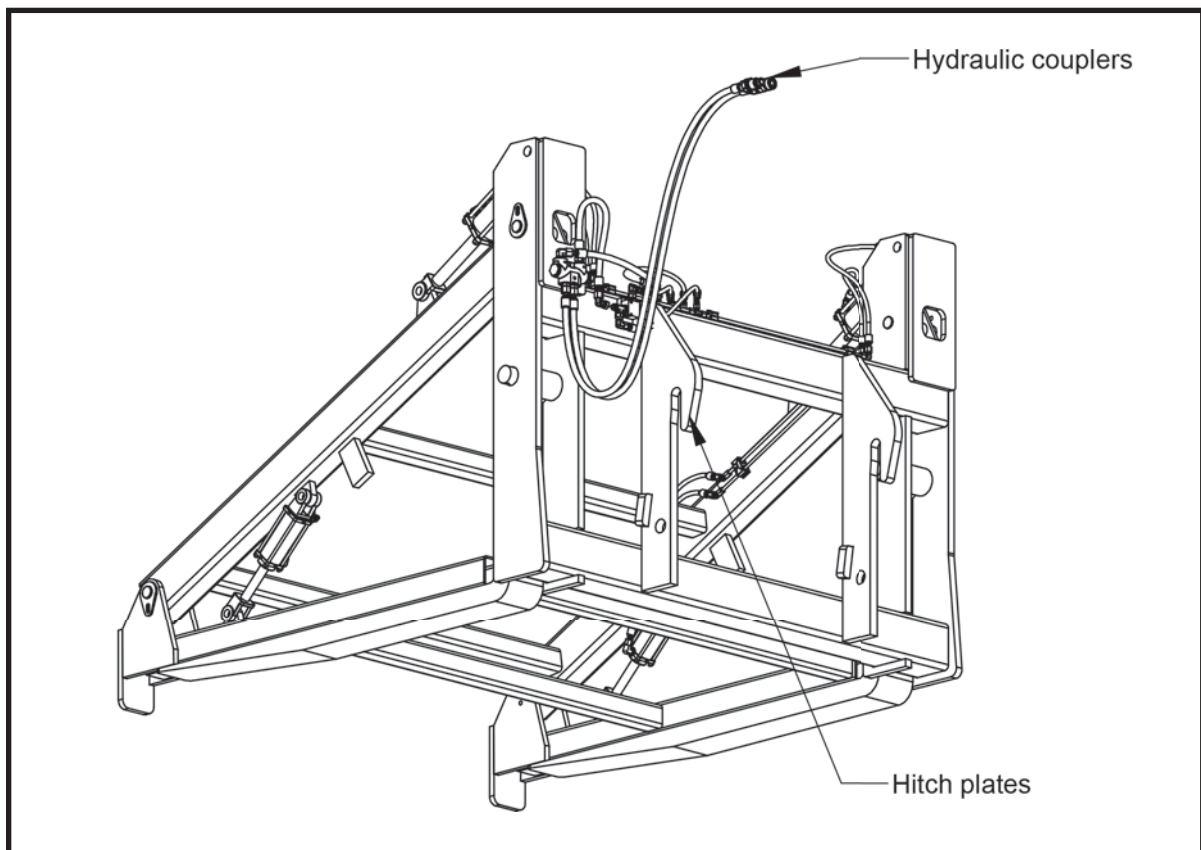


Figure 1: Installation Diagram

LUBRICATION POINTS & PROCEDURES

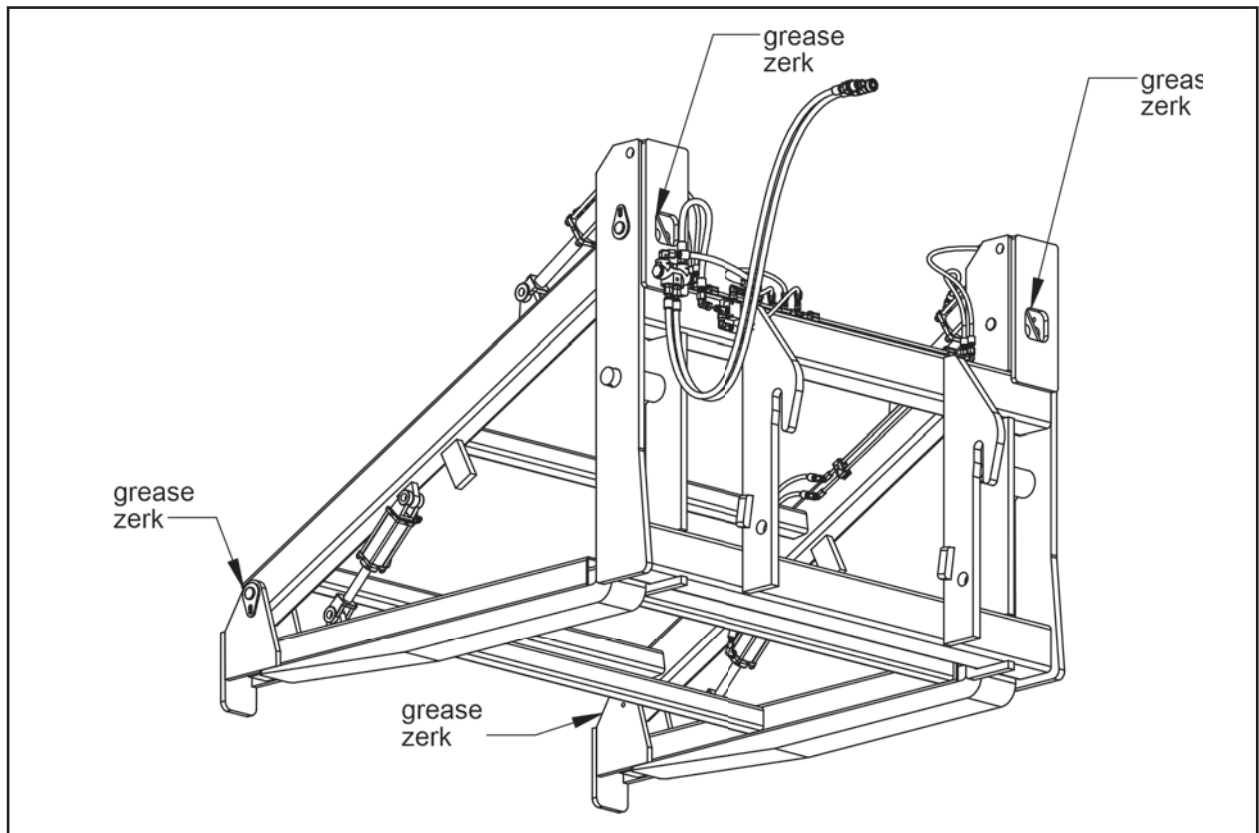


Figure 4: Lubrication Points

■ Lubrication Points:

There are 4 grease points, one at the end of each grapple arm at the pivot points. The grease zerks are located on the hinge tubes welded inside the main arms.

1. Use a high quality waterproof grease
2. Pump grease into each joint until grease extrudes from the gap at the sides. Wipe away any residual grease to avoid attracting dust
3. Lubricate the joints periodically as usage dictates.

PREFLIGHT CHECK LIST



Inspect Equipment Prior to Every Shift

BEFORE starting machine:

- Structural Damage
 1. Look for obvious damage to machine structure — welds, dents, loose fasteners, etc.
 2. Inspect Fork heel for damage.
Thickness: forks must be removed from service when more than 10% of the original thickness has been worn off (ITSDF B56.6-2011 paragraph 7.15)
- Hydraulic lines and components
 1. Check hydraulics for abrasion, leaks, kinks, etc.
 2. Inspect hydraulic and electrical connections to machine



DO NOT inspect pressurized hydraulics without using precautions — injection risk

- ITSDF B56.6-2011 paragraph 6.5.1: At the beginning of each shift and before operating the rough terrain forklift truck, check its condition, giving special attention to the following:
 1. Tires and their inflation pressure
 2. Warning devices
 3. Lights
 4. Lift and tilt systems, load-engaging means, chains, cables, and limit switches
 5. Brakes
 6. Steering mechanism
 7. Fuel system(s)

With machine running, check for proper operation of hydraulic functions on the pipe grapple.

- The grapple arms raise in a smooth and predictable manner
- The grapple arms lower in sequence
 1. Main arms lower until they stop
 2. Once the main arms stop, the clamping arms begin to move

OPERATION DIAGRAMS

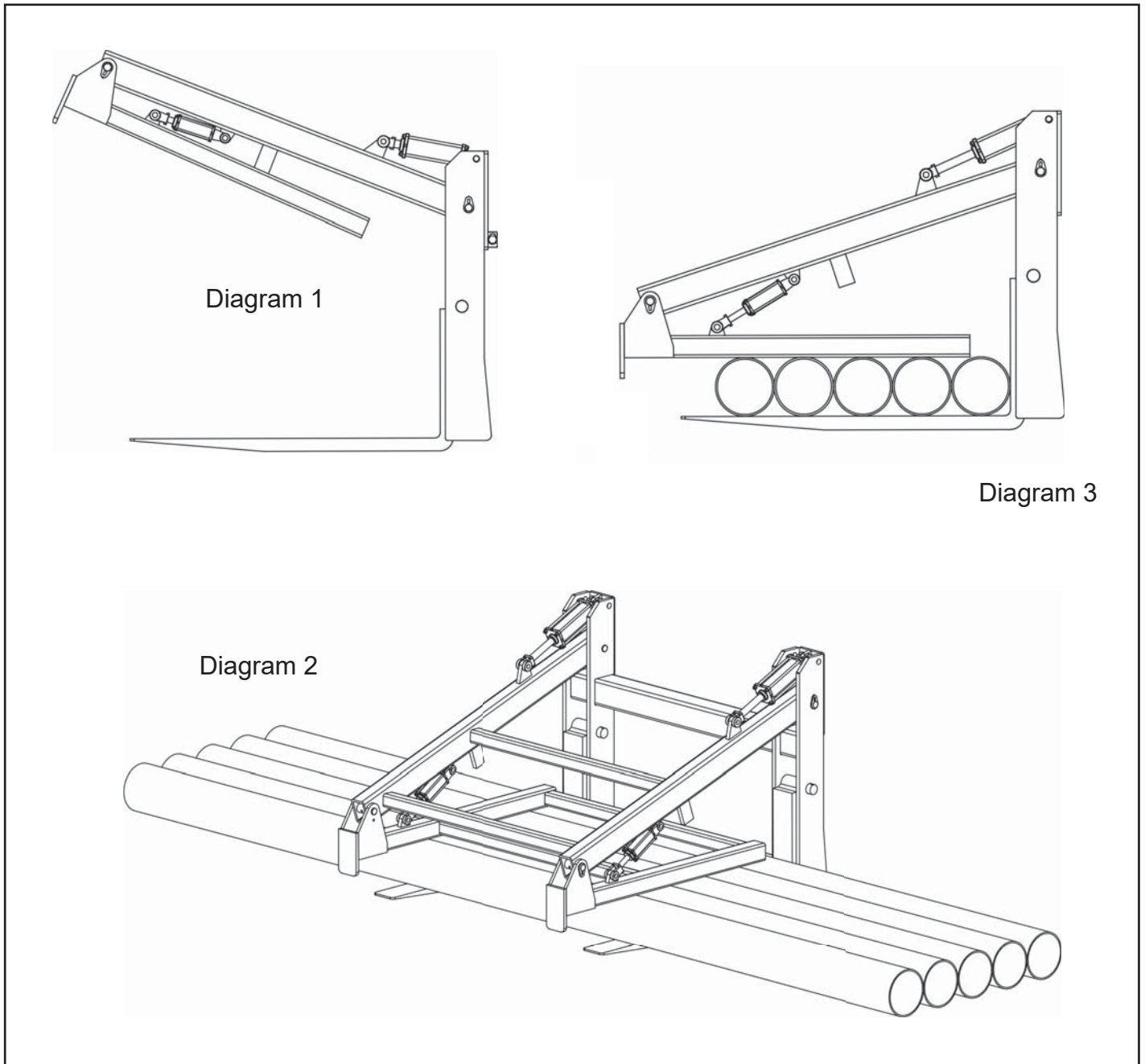


Figure 3: Operations

GENERAL OPERATION

■ Loading Pipe

At some distance away from the load to be lifted, open the grapple arms (Diagram 1)

Roll the pipe grapple forward somewhat and slowly scoop a single layer of pipes making sure to keep the midpoint of the pipes, or the center of gravity of the load, laterally centered between the grapple arms (Diagram 2)

■ Clamping a layer of pipe

Roll the pipe grapple back (Diagram 3) until the pipes gently roll up against the fork shanks, and then lower the grapple arms. The main arms will lower first until contact is made with the pipes, and then the lower arms will move into position.

■ Transporting pipe

Roll the pipe grapple back somewhat to help keep the pipes against the fork shanks. Drive carefully to the new location with the load near the ground.

Avoid moving the machine with the load raised.

■ Placing a layer of pipe

Position the load over the drop location and lower the pipe grapple until the pipes touch the supporting surface where they will be placed. Raise the grapple arms and roll the pipe grapple very slightly forward. Back away from the pipes until all parts of the pipe grapple are clear.



REMOVAL AND STORAGE

■ To remove the pipe grapple for storage:

1. Lower the pipe grapple until it sits on the ground in its storage location, and ensure that the grapple arms are all the way down.
2. **TURN OFF THE MACHINE** and release pressure from the auxiliary hydraulic lines using the manufacturer's recommended procedure.
3. Disconnect the pipe grapple hydraulic lines from the machine boom and store them clear of the pipe grapple hitch plates.
4. Disconnect the hitch:
 1. Quick hitch
 - a. Disconnect the latch pin(s) and store
 - b. Restart the machine
 - c. Roll the machine hitch forward somewhat
 - d. Lower the machine hitch until it clears the hooks on the pipe grapple
 - e. Back slowly away until all parts of the machine are clear of the pipe grapple
 2. Pin-on
 - a. Follow the machine manufacturer's instructions for removing and installing pin-on attachments.

■ Proper storage of pipe grapple:

1. It is preferred that the pipe grapple is stored on wood beams, gravel, asphalt, or other means of preventing it from sitting in mud, standing water, or other conditions which may contribute to corrosion or fouling.
2. Ensure that the hydraulic couplers remain free of dirt and other debris.
3. Protect the cylinder rods on the grapple arms from damage.

Troubleshooting Guide

Description of Problem	Suggested Investigation/Repair
Pipes fall off the ends of the forks even when the arms are down	<ol style="list-style-type: none"> 1. The pipe grapple is equipped with a lock valve that should maintain the clamping pressure. Ensure that this pressure is maintained by the operator, or check the lock valve for damage. 2. Even when the arms are down, the pipe grapple should be rolled back slightly to keep the load back against the fork shanks.
Pipes near the fork shanks are not clamped as well as those near the tips	<ol style="list-style-type: none"> 1. Lift fewer pipes in each load. Heavy loads can deflect the forks slightly which will cause a lower clamping force to be applied to the pipes at the back. 2. Apply a thick, soft material to the underside of each lower grapple arm. Suggested maximum Durometer hardness = 50
Arms drift down when open	The pipe grapple is equipped with a lock valve that should prevent drift. Check the lock valve for damage.
Arms do not sequence properly	A relief valve is used to sequence the arms. The relief setting may be adjusted somewhat to change the pressure at which the lower arms begin moving. Adjust the relief valve to a higher setting to prevent the lower arms from moving too soon.

Arrow Material Handling Products Limited Warranty – Pipe Grapple

Overview

Arrow Material Handling Products offers a Limited Warranty on products delivered hereunder against faulty workmanship and use of defective materials for a period of twelve (12) months from the date of shipment. Seller offers a Limited Warranty for miscellaneous parts and accessories such as cylinders, hoses, switches, valves and wiring delivered hereunder against faulty workmanship and use of defective materials for a period of three (3) months from the date of shipment. This warranty does not include, and there in hereby excludes, maintenance parts and consumables including but not limited to hydraulic fluid, oil, belts, teeth, blades, filters, hooks, chains and other similar items.

Disassembly, modification or welding of units without Arrow's written authorization voids the warranty. Hydraulic hoses are warranted against failure due to workmanship. Improper installation, ripping or cutting due to unauthorized modifications of Arrow installation procedures is not warranted. An Authorized Dealer or Arrow representative must install hydraulic kits and components for failures to be given warranty consideration.

No warranties are expressed or implied as to the fitness of the equipment on which the attachment or accessory is installed. The purchaser is responsible for promptly informing Arrow Customer Service of any suspected operational deficiencies or failures. Arrow is the sole party responsible for analysis of reported deficiencies or failures. Repair or replacement will be at the sole discretion of Arrow. Field repairs or modifications undertaken without prior approval by Arrow Customer Service may invalidate the warranty.

All returns require a MRA. That policy and form can be found on the website or via 913-495-4803.

General

The Arrow Limited Warranty is extended only to the original purchaser and may be void in the event that the product is sold or otherwise transferred. No warranty will apply to any product that has been (i) modified, altered or adapted without Arrow's written consent, (ii) abused or misused, (iii) repaired by any third party in a manner that fails to meet Arrow's repair standards, (iv) improperly installed, or (v) used with any device or implement not covered by this warranty.

The warranties set forth herein are in lieu of any and all other warranties, express or implied, including the warranties of merchantability and fitness for a particular purpose. The purchaser acknowledges that no other representations or warranties were made or relied on in connection with the purchase of the Arrow Products. No person is authorized to vary, modify or change the terms of this limited warranty.

Neither party shall be liable for any indirect, punitive, special, incidental or consequential damage in connection with or arising out of the use of the property sold to the purchaser, including without limitation, loss of business, revenue, profits, goodwill, consequential damages, whether in contract or tort, including negligence.

Nothing in this warranty affects any statutory rights of consumers or other purchasers that cannot be waived or limited by contract. This limited warranty gives you specific legal rights, and you may have other rights, which vary from state to state and country to country.

Limitations

This LIMITED WARRANTY does not cover product, which in the opinion of Arrow, is damaged due to abuse, misuse, misapplication, prohibited operation, improper maintenance, alteration, unauthorized service, contamination by the base machine, or normal wear and tear. This LIMITED WARRANTY is void if the product is modified in any way without the written consent or instruction of Arrow. This LIMITED WARRANTY is null and void if the product is used in a prohibited operation, or unauthorized adjustment / assembly / disassembly has occurred. This LIMITED WARRANTY is the exclusive warranty and is given in lieu of any and all other warranties, whether expressed or implied, arising in any fashion including but not limited to the course of dealing and course of performance, and including but not limited to warranty of merchantability or warranty of fitness for a particular purpose. Dealers or Agents of Arrow have no authority to make any type of representation or warranties on behalf of Arrow beyond those expressly set forth in this document.

In no event shall Arrow be liable to any party, including but not limited to buyer, for any direct, incidental, consequential, punitive, or special damages, including but not limited to loss of profits, loss of productivity, in any way related to or arising, directly or indirectly, from the product. The liability of Arrow for any and all losses and damages to buyer, its successors and assigns, resulting from any cause whatsoever, including the negligence of Arrow, irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the product with respect to which such losses or damages are claimed.

Please refer to Arrow's Terms and Conditions of Sale document on the website for complete information.

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800-821-7563

www.ArrowMHP.com

*16000 W. 108th Street
Lenexa, Kansas 66219
p 913-495-4800 f 913-227-0523
sales@ArrowMHP.com*

