

OWNER'S MANUAL AND USER'S INSTRUCTIONS

MODEL A-160 HYDRAULIC BRAKE ACTUATOR



TRAILER
Buddy[®]
PRODUCTS BY LFP

San Marcos, CA • Winchester, TN

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WARNINGS

THROUGHOUT THIS MANUAL, THE FOLLOWING SIGNAL WORDS AND SYMBOLS ARE USED TO ALERT YOU TO POTENTIAL HAZARDS. OBEY ALL MESSAGES AND INSTRUCTIONS. FAILURE TO FOLLOW THESE MESSAGES AND INSTRUCTIONS MAY LEAD TO POSSIBLE INJURY OR DEATH.

 **DANGER**

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.

 **CAUTION**

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

CAUTION used without the alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

INTRODUCTION

Your trailer is equipped with the Model A-160 Hydraulic Brake Actuator. Trailer brakes will automatically apply whenever the tow vehicle's brakes are applied. They will develop stopping (deceleration) force in direct proportion to the stopping force generated by the tow vehicle.

 **WARNING**

This actuator should only be installed on trailers with a Gross Vehicle Weight Rating (GVWR) of 16,000 lbs. or less.

 **WARNING**

The A-160 actuators are designed for use with a 2 5/16" hitch ball. The hitch ball and tow vehicle must be rated to handle the actual Gross Vehicle Weight (GVW) of the trailer and load.

ACTUATOR

The Model A-160 actuator maximum load rating is 16,000 pounds. The maximum load rating is for the total weight of the trailer and boat fully loaded including all gear and includes tongue weight.

Read and familiarize yourself with this handbook. Also, review and understand the guidelines and requirements for towing published by the tow vehicle manufacturer and the trailer manufacturer.

Keep this handbook in your tow vehicle or with your trailer for future reference. Contact your dealer or our customer service department if additional information is desired.

You the user are responsible for the consequences of inadequate maintenance, deliberate misuse, alteration or damage to the actuator.

Trailer braking is controlled by the actuator mounted on the tongue of the trailer. When the tow vehicle brakes are applied, the “surge” or “push” of the trailer toward the tow vehicle automatically applies and synchronizes the trailer brakes with the tow vehicle brakes. The coupler slides into the actuator applying force to a piston inside of a master cylinder, which applies the trailer brakes.

HOW THE ACTUATOR WORKS

At constant speed, the brake actuator master cylinder piston is in the free (extended) position; and the trailer brakes are not applied. The shock absorber controls random application of the trailer brakes when towing on rough roads. See Figure 1.

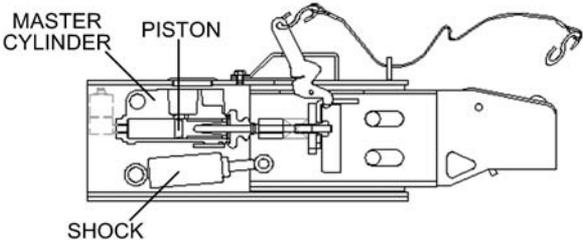


FIGURE 1: ACTUATOR EXTENDED (RUNNING POSITION)

When the tow vehicle slows down, the trailer moves toward the tow vehicle. The actuator slides over the coupler, applying force to the master cylinder piston in direct proportion to how fast the tow vehicle is slowing and how much the trailer weighs. The piston moves into the master cylinder, building pressure to apply the trailer brakes. The shock absorber makes sure the brakes are applied and released smoothly. See Figure 2.

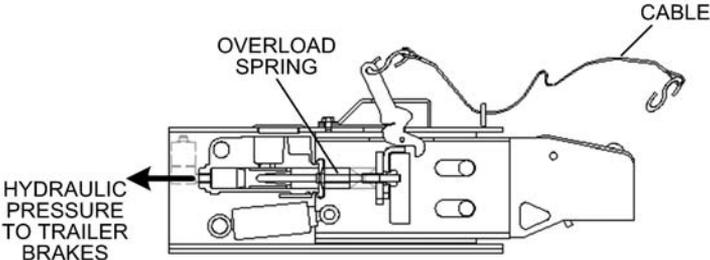


FIGURE 2: ACTUATOR COMPRESSED (STOPPING)

NOTE: You may notice a slight clunk when accelerating from a dead stop or anytime after braking, which is normal due to the nature of surge brakes. Contact your dealer or UFP if the clunk becomes excessive, or if you have any concerns about the performance of your brake system.

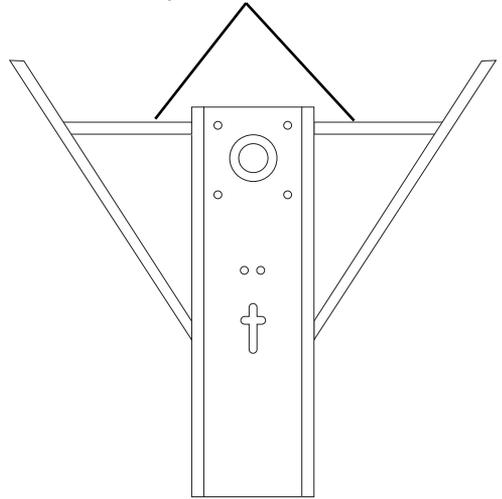
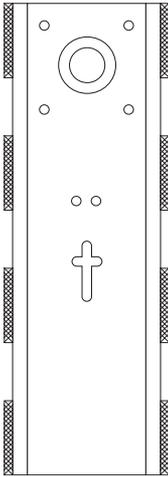
HOW TO INSTALL THE ACTUATOR

INSTALLATION: WELD-ON APPLICATION

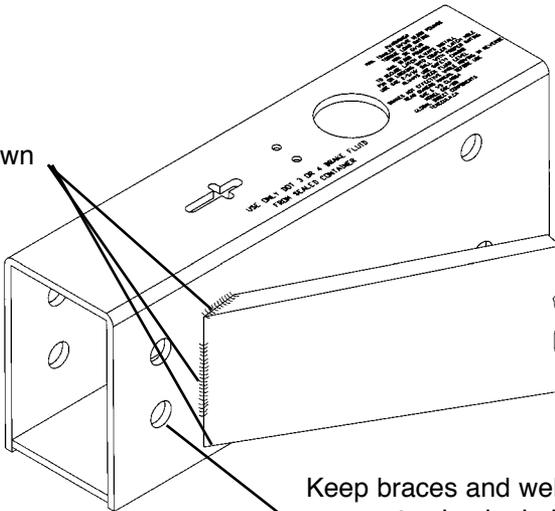
NOTE: disassembly of the actuator before welding is recommended.

Tack Actuator down on the four corners then weld in a criss cross pattern using 2" to 2-1/2" welds with 2" spaces between welds (when welding down to a flat area of the tongue)

Use gussets to support the back of the actuator if welding in position shown

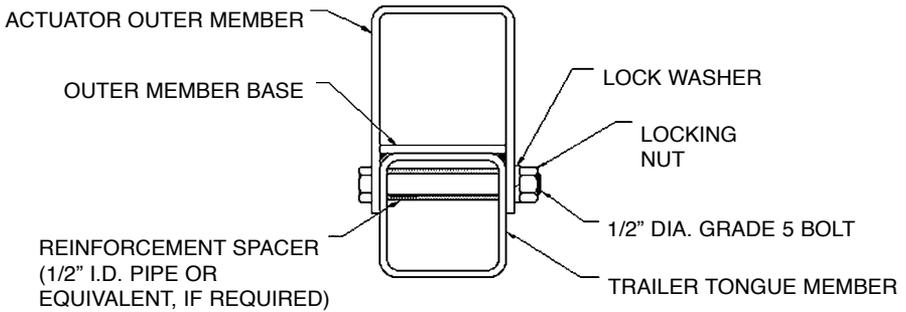


Weld as shown



Keep braces and welds back to allow access to shock pin holes

INSTALLATION: BOLT-ON APPLICATION



1. Determine proper location of brake actuator on trailer tongue.
2. Drill 33/64" holes in trailer tongue where bolt holes are positioned.
3. Attach brake actuator to trailer tongue with 1/2" diameter bolts (3) S.A.E. grade 5 or greater, lock washers (3) and nuts (3). Torque nuts to 75-85 ft.-lbs.

⚠ WARNING

The trailer tongue must have adequate strength to support the attachment of the brake actuator without the mounting nut losing torque during the life of the trailer. If there is any potential for trailer tongue deformation or loss of mounting nut torque, the trailer tongue must be properly reinforced to prevent any potential loosening of the brake actuator in service. See figure for view of recommended trailer tongue reinforcement.

⚠ WARNING

TO AVOID PERSONAL INJURY OR PROPERTY DAMAGE, OBSERVE THE FOLLOWING INSTRUCTIONS:

The weight rating of the coupler is dependent on the correct bolts being used. You must use 3, Grade 5, 1/2" mounting bolts and locking nuts only. If you are missing bolts, replace them immediately. Using the wrong size, grade, or number of bolts will reduce the weight rating of the coupler and could cause separation of your towing equipment from the towing vehicle. Torque locking nuts to 75-85 ft.-lbs.

BLEEDING OF THE BRAKE SYSTEM

1. Connect and tighten all brake lines.
2. Fill master cylinder with DOT 3 or 4 brake fluid.
3. Bleed brake system using a pressure-type brake bleeder or manually, as follows:
4. Remove two 5/16" hex head bolts (#23) and lock washers (#22) that hold lever guide (#20) and flat safety stop plate (#21). Remove lever guide and safety stop plate. Using short strokes, pull forward on emergency lever (#19), pumping master cylinder until brake fluid within master cylinder stops bubbling.
5. Attach a bleeder hose to bleeder screw on the brake furthest from the actuator and submerge other end of hose into a transparent container partially filled with brake fluid. Loosen bleeder screw and, watching hose in transparent container, use emergency lever to pump master cylinder. Close bleeder screw before releasing lever at master cylinder. Continue process until no more bubbles are released from bleeder screw. Move to next wheel, and repeat process until all brakes have been bled. (Note: Check fluid level in master cylinder frequently while bleeding brakes (every 4 or 5 strokes). Refill as necessary to keep level above half full.)
6. Once bleeding is completed, refill master cylinder and attach cap (#6) secure reservoir cap. Replace safety stop plate, lever guide, lock washers and 5/16" hex head bolts.
7. Test brakes by pulling emergency lever (#19) forward until it locks into its second notch position. (Lever should be approximately straight up.) Attempt to rotate wheels in a forward direction. If any wheels rotate, brakes must be adjusted (drum style only) or system needs to be rebled. Repeat test procedure as necessary.

BRAKES

The actuator is to be used only with brakes specifically designed for trailer service. It should not be used with any custom built, one-of-a-kind brakes because such combinations have not been tested and evaluated. The actuator is designed for use with one or two sets of 10" drum brakes. It can also be used with one or two sets of 12" drum brakes. The basic actuator may be used with two sets of UFP 10" disc or 12" disc brakes. A special version is available for operating 3 sets of UFP 10" or 12" disc brakes. Contact factory for further information.

WARNING

Some trailers do not have adequate brakes for the trailer, how it is used, or where it is towed. Not having adequate trailer brakes will increase stopping distance and cause more lining wear or overheating on your vehicle and trailer. You may wish to discuss this subject with your trailer dealer.

TOWING REQUIREMENTS - EQUIPMENT

WARNING

You must match the tow vehicle and trailer. Also make sure the hitch, hitch ball, and safety chain ratings match or are greater than the trailer Gross Vehicle Weight Rating.

TOW VEHICLE

Review the tow vehicle owner's manual and trailering guide for information on towing capacity, requirements for brakes, use of weight-distributing hitches and other towing recommendations. Make sure your vehicle combination complies with the Gross Combined Weight Rating (GCWR) limits specified by the tow vehicle manufacturer.

BRAKE LAWS

Brake laws vary from state to state. Be sure you understand and comply with regulations. Make sure your vehicle combination has adequate brakes and keep them properly adjusted and in good working condition. Brake laws usually set minimum standards. You may wish to consider a better braking capability depending on the tow vehicle, miles driven and towing terrain.

HITCH

The tow vehicle's hitch must have a rating equal to or greater than the trailer GVWR.

HITCH BALL

The hitch ball must have a rating equal to or greater than the trailer GVWR. Use only a quality machined, or forged ball, with a smooth finish. Balls smaller than 2.282" can cause shock loading and a sudden disconnection could result at worse case. The A-160 requires a 2 5/16" hitch ball with a rating equal to or greater than the trailer GVWR. The 2 5/16" ball must be within the limits of 2.282" - 2.312" diameter when measured in all directions. Hitch balls may be purchased from your dealer.

HITCH HEIGHT

For proper tow vehicle and trailer hookup and towing performance, the tow vehicle and trailer are to be level with respect to the ground after hitching up. If your trailer is not level, equipment is available to raise or lower the hitch ball. A weight equalizing hitch or load support suspension equipment may also be required to keep the tow vehicle level and to properly load each axle.

SAFETY CHAINS

Adequate safety chains must be used and conform to the Society of Automotive Engineers (SAE) J684 standard, "TRAILER COUPLING AND HITCHES - AUTOMOTIVE TYPE".

WARNING

The strength rating of EACH length of safety chain must be equal to the trailer GVWR.

Make sure that your safety chains are fastened to the frame of the trailer and to the hitch or tow vehicle frame. Safety chains fastened directly to the hitch ball or to the bumper, are not acceptable and will not pass vehicle inspections. Connect safety chains using a crossed pattern under the tongue.

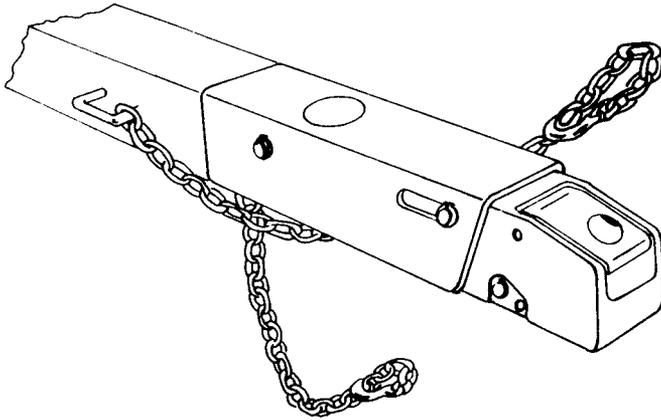


FIGURE 3: TYPICAL DOUBLE SAFETY CHAIN INSTALLATION

SWAY CONTROL DEVICES



Trailer sway control devices that restrict operation of the actuator **MUST NOT** be used. These devices can limit how much the trailer brakes work.

The coupler must be able to slide freely into and out of the actuator when your vehicle slows down.

WEIGHT DISTRIBUTING HITCHES

The excessive tongue weight produced with weight distributing hitches may reduce brake performance. Actuator inner slide must move in and out freely during towing. Contact your trailer manufacturer regarding your application.

HOW TO ATTACH THE TRAILER

To connect the trailer to the tow vehicle, open the coupler mechanism (see instructions below) and if necessary, raise the trailer jack. Slowly back up the tow vehicle so that the hitch ball is under the coupler.



Do not move the trailer to the tow vehicle. When the trailer is moved without a tow vehicle, the brakes do not work.

If the latch accidentally opens, the coupler could detach from the hitch ball. The hitch pin should fit easily into the hole (Figure 4). If it does not, the coupler latch is not completely closed. Every time the coupler is attached to the hitch ball, make sure the coupler completely covers the hitch ball and the lift handle will not open without pushing the push button to the side. If the hitch pin is damaged or lost, contact UFP for a free replacement pin.



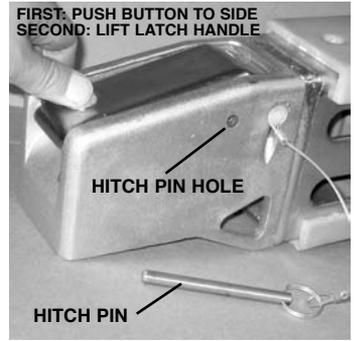
You must install either the hitch pin (supplied) or a 3" span coupler lock (1/4" or 5/16" shank) into the hitch pin hole before towing to prevent the coupler latch opening accidentally. See figure 4.

TO OPEN THE COUPLER

Remove hitch pin from hole in the side of the coupler. Push button on top of handle to the side. While holding button to the side, raise handle by lifting front with two fingers. The coupler should unlatch easily. If not, the ball may be oversized or eggshaped, foreign matter could be lodged in coupler ball socket, or the coupler is pushing on the hitch ball. Check to make sure the wheel on the tongue jack is raised or that you are not parked downhill. Correct these conditions, then try to open the handle. Examples include tongue jack forcing front of trailer up or trailer pushing against tow vehicle. Correct as necessary.

TO CLOSE COUPLER

Place coupler over the ball, lower coupler and close handle. You will hear a “click”. Handle should close with finger pressure. If handle will not close freely, ball is not fully inserted into socket, is oversized or eggshaped. **DO NOT FORCE HANDLE.** If necessary, replace ball with a quality unit that meets SAE specifications. Insert hitch pin into hole on side of coupler.



**FIGURE 4:
OPENING COUPLER**



DO NOT tow your trailer if latch handle will not remain closed or with the handle open. Check to see if coupler is locked by lifting up on the handle without pushing the button to the side before towing. If the handle opens, the

hitch ball is not the right size, oversized, or eggshaped, or the latch parts have been damaged. If the latch is damaged, contact UFP for replacement parts.

TRAILER BREAKAWAY SYSTEM

Secure the breakaway cable to the bumper or frame of tow vehicle as close to center as possible (do not attach to safety chains). The cable **MUST** hang clear of the trailer tongue and be long enough to permit sharp turns without pulling the cable and will not be applied unless the safety chains fail. Do not loop S-hook over breakaway cable to attach it.



Never tow a trailer without the breakaway cable secured to the tow vehicle.

If the breakaway is accidentally pulled and the brakes are applied, find out why this happened and fix the problem. Inadvertent setting of the brakes by pulling the breakaway cable is the single most common mistake users make.

This decal positioned as shown

**BRAKES ON
DO NOT TOW**

**BRAKES OFF
TOWABLE**

Part #32522

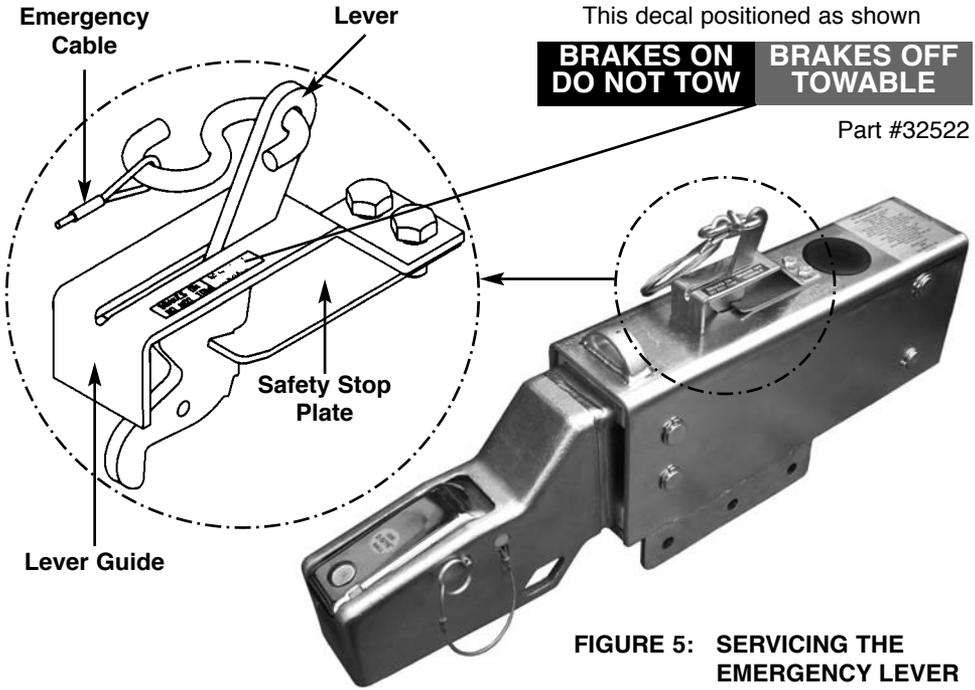


FIGURE 5: SERVICING THE EMERGENCY LEVER

⚠ WARNING

All actuators must have a way to apply the trailer brakes should the trailer become completely detached from the towing vehicle. The breakaway cable is the third line of defense after trailer separation. Before the breakaway cable is pulled, the coupler must become detached from the hitch ball and then the safety chains must fail. At this time the breakaway cable is pulled which will apply a braking force to the trailer. Note: The breakaway system is not intended to lock up the trailer brakes after tow vehicle separation but rather to apply just enough braking force to keep the trailer from free-wheeling down the road. The breakaway system must be reset manually after it has been activated.

DO NOT USE THE BREAKAWAY SYSTEM AS A PARKING BRAKE.

SERVICING THE EMERGENCY LEVER

If emergency lever of actuator is applied, it can be disengaged by using a screwdriver to lift upward on front of flat safety stop plate while pulling lever forward until released. A thorough inspection of emergency lever, safety stop plate, and cable with S-hooks is required. Damaged parts must be replaced as follows (see figure 5):

- A. Remove Cable S-hook from emergency lever, emergency lever guide and flat safety stop plate, then pull lever out of actuator outer case through cross-slot in top.
- B. Install new emergency lever through cross-slot in top of outer case. Attach new safety stop plate and emergency lever guide.
- C. Insert S-hook on emergency cable into hole in emergency lever and squeeze shut.

- D. Add adequate brake fluid to master cylinder and bleed brake system per instructions in installation section.

Check to see if the actuator is reset. Extend the actuator fully. Remove the cap from the top of the actuator and pull the plug from top of the reservoir cover. While looking at fluid in the reservoir, manually compress actuator. In the first 1/8" of coupler movement the fluid in the reservoir should "splash" or "ripple" slightly. If it does, the actuator is working properly.

SAFETY CHECKS BEFORE TOWING

WARNING

FAILURE TO READ AND FOLLOW THESE INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.

ACTUATOR CONDITION

Check the actuator and coupler for damage, bent parts, and excessive wear. Replace parts if needed. Contact UFP for replacement parts. Check that the bolts that attach the actuator (if equipped) to the trailer are tight.

WARNING

COUPLER

Check that the coupler (latch) handle closes (down) completely when the hitch ball is in the coupler. To make sure the coupler is secured to the hitch ball,

look under the coupler and check. Also, while the coupler is attached, raise the front of the trailer 2" to 4" with the tongue jack. If the coupler stays connected, it is secure. If coupler does not stay connected, try re-attaching the coupler and check again. If coupler will not stay attached to hitch ball, or latch opens inadvertently, **DO NOT TOW TRAILER – CONTACT UFP.**

REMEMBER TO LOWER TRAILER/RAISE JACK BEFORE TOWING.

Note: At times the coupler can push on the hitch ball when parked. Check to make sure the tongue jack is raised or that you are not parked downhill. Correct these conditions, then try to open the handle.

WARNING

TONGUE WEIGHT

It is very important your trailer have 5% to 10% tongue weight when it is loaded and the tongue is level. For example, a trailer weighing 4,000 pounds

MUST have a tongue weight of at least 200 pounds. This will help reduce trailer from swaying from side to side ("fishtailing"). A scale can be used to find the tongue weight of the trailer.

Not having enough tongue weight can cause the trailer to sway from side to side and the coupler to rattle up and down as you go down the road. This is very important and if the tongue weight is not in the 5% to 10% range, you should move the cargo (gas tank, anchor, fishing tackle, cooler) from the back to the front or front to back to make sure the tongue weight is in the range. On some trailers, the axle or axles can be moved to change the tongue weight.

⚠ WARNING

BREAKAWAY CABLE

Check the breakaway cable each time before you tow and at gas and rest stops to make sure it has not been damaged.

⚠ WARNING

SAFETY CHAINS

Make sure that your safety chains are secured to the tow vehicle per the instructions supplied by trailer manufacturer. SAE recommendations are listed in “Requirements-Equipment” section.

⚠ WARNING

FLUID LEVEL

Check the fluid in the master cylinder reservoir each time before you tow or if you see brake fluid leakage. Refill as required.

⚠ WARNING

HITCH BALL

Make sure a hitch ball of proper size and correct load rating is used. A film of clean grease on the ball will extend coupler and ball life and stop squeaking. Wipe ball clean and renew film periodically.

⚠ WARNING

TOW VEHICLE HITCH

The hitch on the tow vehicle must be of the proper load rating and in good condition. If hitch is of the receiver type, make sure receiver pull pin is in place and safety pin is installed.

⚠ WARNING

TRAILER JACK

Trailer jack must be fully retracted and caster wheel removed (if necessary) before towing.

⚠ WARNING

AUTOMATIC BRAKE LOCKOUT (if equipped)

The electrical lead from the solenoid valve must be connected to the tow vehicle backup lights. A “click” should be heard when the tow vehicle is shifted into reverse and the backup lights come on.

If solenoid is not making a clicking sound when energized, then secure the tow vehicle and trailer and check if the solenoid is properly grounded.

⚠ WARNING

ELECTRICAL WIRING

Plug in connector and check signal, brake and running lights.

BACKING

When you back your car and trailer, the coupler will move back and apply the trailer brakes. The brakes will apply at different levels depending on how fast you back up, the type of brakes, the road or surface you are on, and the angle of your trailer. If your trailer has drum brakes, most of the time the trailer brakes won't be a problem when backing up. Below are options that help you back up with the trailer brakes.

Some trailers with disc brakes need an electrical solenoid control to allow the trailer to back up. This control is wired to the back up lights on the tow vehicle and when the tow vehicle is put into reverse, this control does not allow the trailer brakes to apply.

Automatic Brake Lockout

An automatic brake lockout is recommended if the trailer has disc brakes. Whenever you back up, a 12 volt electrical signal from the tow vehicle backup light circuit energizes the solenoid valve. Hydraulic pressure is prevented from building up so the brakes will not come on.

The electrical control may also be used with drum brakes. To change the existing master cylinder in the actuator, it will have to be replaced. Call UFP if you want to make this change.

PARKING AFTER USE



After parking the trailer **ALWAYS** move the coupler all the way forward by hand to keep moisture from coming in contact and corroding the master cylinder bore. If trailer has been in salt water, rinse

off trailer and flush out the brake drums or rotors with fresh water.



If you are not skilled in the following procedures, we recommend you contact your dealer for this service. If you have any questions contact our customer service department at (760) 744-1610.

PERIODIC INSPECTION AND MAINTENANCE

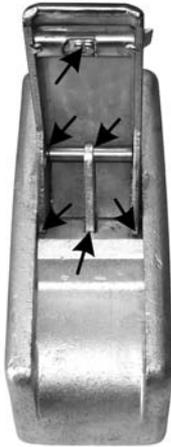
In order to ensure efficient operation, the following checkpoints should be observed annually or every 2000 miles, whichever occurs first.

1. Inspect tow hitch per tow hitch manufacturer's instructions for corrosion or damage. Repair or replace components as necessary.
2. Check for wear on hitch ball. Ball diameter must be in the range of 2.282" - 2.312" when measured in all directions. If ball is worn, it is **UNSAFE** and must be replaced. It could cause improper brake performance, separation of ball and actuator, or noisy and jerky trailer operation.
3. Check coupler latch operation for excessive wear and fit on ball. Check fit on ball as outlined in "Coupler" section of the "Safety Checks Before Towing" Section.

⚠ WARNING

A loose fit may allow coupler portion of actuator and ball to separate.

4. Check coupler mechanism for smooth operation. If button is hard to push or latch handle does not open freely, lubricate points on coupler latch mechanism indicated by arrows in Figure 6.



**ARROWS INDICATE WHERE
LIGHT OIL OR GREASE
NEEDS TO BE APPLIED ON
THE COUPLER**

FIGURE 6: COUPLER LUBRICATION POINTS

5. Check actuator for excessive wear. Contact factory for replacement parts.
6. Check actuator travel. Excessive actuator travel (over one inch) when brakes are applied indicates a need to adjust the brakes (not necessary with disc brakes) or air in the brake lines.
7. Check brake fluid in the master cylinder reservoir. To gain access to the reservoir, remove the cap on top of the actuator. Clean area around master cylinder plug. Use a screwdriver to carefully pry off plug. Make sure rubber seal around opening is in good condition. Clean brake fluid off level indicator on plug. Re-install and remove plug. Brake fluid should just touch the end of the level indicator.
8. Check for foam or bubbles in the brake fluid. If either are present, drain fluid from master cylinder and replace only with new brake fluid of the same type, (DOT 3 or 4). In order for brakes to function properly all air must be expelled from the brake system. If bleeding is necessary, follow “MANUAL BLEEDING OF THE BRAKE SYSTEM” instructions as outlined in this booklet.

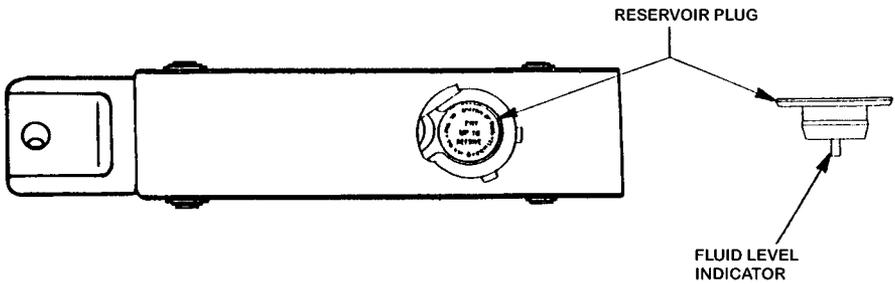


FIGURE 7: MASTER CYLINDER RESERVOIR PLUG

NOTE: It is imperative that the system be filled with only **ONE** type of brake fluid. Different types do not mix. DOT 3 and 4 are used by most manufacturers. Follow instructions on brake fluid container.

9. Check safety chains and attachment points for damage or wear. Repair or replace as necessary.
10. Check the breakaway cable for worn or frayed cable strands. End fittings should be checked for damage. Replace if necessary.
11. Check for any hydraulic leaks in the brake system. Be sure all tube fittings are tight. Periodic checks must be made on all hoses, brake line tubing and fittings to guard against cuts, worn hoses and loose fittings which may cause leaks in trailer brake hydraulic system. Replace deteriorated and damaged parts as necessary.
12. Check brake adjustment (not necessary for disc brakes) after first 300 miles and every 2000 miles thereafter. **PROPER ADJUSTMENT OF BRAKES IS EXTREMELY IMPORTANT FOR STOPPING CAPABILITY.** If brakes are in need of adjustment, we recommend that you follow the manufacturer's instructions or steps outlined in this booklet.

EXTENDED STORAGE MAINTENANCE

(Over one year)

The following preventive maintenance is recommended for extended periods of storage.

1. Check brake system for fluid level in master cylinder. If fluid level is extremely low, air may be trapped in brake lines. Bleed all lines if necessary and fill reservoir to proper level.
2. Lubricate all links and pivots to prevent rusting.

If equipped with drum brakes and storage is in a humid environment, remove wheel and drum assemblies and spray a good anti-corrosion compound (CRC Formula 5-56, for example) under rubber boot on forward end of brake wheel cylinder. Also, spray springs, adjuster and anchor pin.

⚠ CAUTION

Avoid spraying drum and brake lining surfaces.

3. Grease bearings, fill hub cavities and reinstall wheel and drum assemblies.
4. Top off bearing protectors, if equipped, with grease.
5. Make sure breakaway system has not been set, and actuator is fully extended.
6. If possible, store away from excessive moisture.

BRAKE ADJUSTMENT

Raise one trailer wheel at a time, remove the dust cover from the adjusting slot at the lower part of the back side of the brake assembly. Insert brake adjusting tool or screwdriver as shown (figure 8). Adjust brake shoes out until wheels will not rotate in the forward direction by moving the end of the adjusting tool toward top of brake as illustrated. When this condition is felt, back off (loosen) the adjustment as follows:

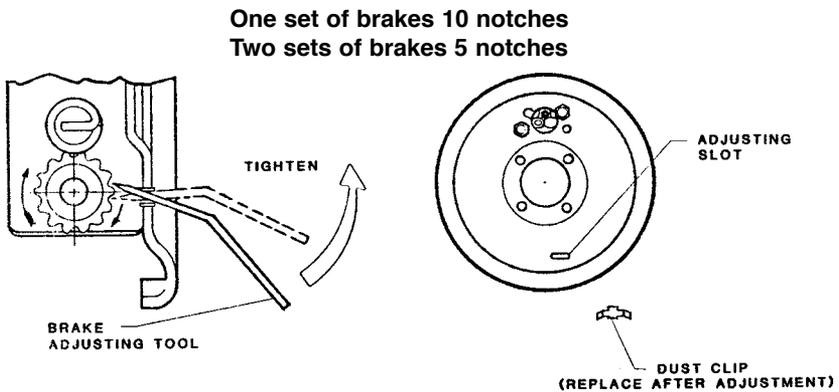


FIGURE 8: ADJUSTING BRAKES

Note: UFP 10" brake drums have a hole on the front side to permit brake lining inspection and access to the brake shoe adjustment star wheel. Simply remove the trailer wheel to access the inspection hole.

We recommend that your trailer brakes be adjusted after the first 300 miles of use and at least every 2,000 miles thereafter. In addition, the trailer brakes should also be inspected after the first two years of service for wear and corrosion (one year after substantial saltwater immersion). Service, lubricate and/or replace parts as necessary for safe, sure operation. Thereafter, set up a maintenance schedule that assures proper inspection and adjustment of brakes. The time interval should be based on towing conditions, operating environment (salt vs. fresh water, etc.) distance towed, storage conditions, etc. The goal is simple. Make sure your brakes will work properly when you need them most, in an emergency stop. Plated and galvanized brakes are now available and are better able to withstand corrosion.

HYDRAULIC DISC BRAKE ADJUSTMENT

Hydraulic disc brake adjustment is not necessary, they are self-adjusting.

TROUBLESHOOTING BRAKE PROBLEMS

WARNING

If any of the following problems develop, the trailer must be immediately stopped and the proper corrective action taken before the trailer is put back into service. Failure to do so may lead to loss of proper trailer braking capability,

or damage to the trailer and load.

PROBLEM: COUPLER LATCH HANDLE DOES NOT OPEN OR CLOSE EASILY

POSSIBLE CAUSE	REMEDY
Oversize hitch ball	Check ball size at several positions, ball should be within 2.282"-2.312" in diameter. Replace if necessary.
Ball not fully inserted in ball socket.	Check for proper ball size, (see above) and positive tongue load. Check to see if tongue jack is fully retracted. Make sure there are no foreign objects or excessive paint inside coupler cavity.
Trailer and tow vehicle are not level with each other, or are facing downhill.	Reposition tow vehicle and trailer or block trailer tire and extend actuator.
Excessive corrosion	Lubricate or replace parts as necessary.

WARNING

If the latch handle does not close freely, **DO NOT** tow the trailer until cause of the problem is located and eliminated. Forcing latch handle closed will make opening latch handle extremely difficult.

PROBLEM: SQUEAKING, CLUNKING AND CLATTERING AT ACTUATOR

POSSIBLE CAUSE	REMEDY
Hitch ball requires lubrication.	Lubricate with conventional multipurpose lubricant or commercial lubricant made for hitch balls.
Loose hitch ball	Inspect hitch ball and tighten.
Loose hitch	Inspect hitch and repair.
Loose mounting bolts (if equipped)	Inspect brake actuator mounting bolts and tighten as necessary, (70-80 ft-lbs).
A worn or too small hitch ball.	Replace hitch ball with a quality unit that meets SAE specifications.
Worn shock absorber	Replace shock absorber.
Air in brake lines allowing actuator to travel too far.	Check for leaks, re-bleed brakes.
Trailer is equipped with "free backing brakes".	Clunking noise is typical for these types of brakes as long as braking performance is normal.

PROBLEM: WHEN BRAKING, BRAKES REPEATEDLY COME ON AND RELEASE, BRAKING IS NOT SMOOTH, THIS CONDITION IS CALLED "CHUCKING"

Worn out shock absorber in actuator.	Replace the shock absorber.
Loose hitch or hitch ball.	Correct as necessary.
Not enough tongue weight or shocks on tow vehicle too soft.	Correct as necessary.
Air in the brake lines.	Bleed the brake system.
Brakes out of adjustment.	Adjust the brakes properly.
Contaminated brake linings.	Fix cause of contamination (leaky wheel cylinder or hub grease seal). Replace linings and clean braking surface on drum or rotor.
Rusted master cylinder bore.	Replace actuator master cylinder.
Breakaway cable has been pulled.	Reset breakaway cable.

PROBLEM: BRAKES DO NOT OPERATE, POOR BRAKE PERFORMANCE

POSSIBLE CAUSE	REMEDY
<p>Worn out brake shoes or disc brake pads.</p> <p>Foreign material in the brake unit assembly.</p> <p>Insufficient amount of hydraulic fluid.</p> <p>Broken lines or pinched line.</p> <p>Seized actuator master cylinder. Prevents piston from stroking.</p> <p>Corrosion/rust keeps brake from operating.</p> <p>Inadequate brakes for load or driving conditions.</p>	<p>Replace brake shoes/pads on both sides of axles and check drums/rotors for wear or damage.</p> <p>Clean thoroughly. Replace shoes and linings if contaminated.</p> <p>Fill reservoir and bleed brakes. Check for leaks.</p> <p>Replace faulty lines and bleed brakes.</p> <p>Replace actuator master cylinder.</p> <p>Replace damaged components or entire brake assembly as required.</p> <p>If you have a tandem axle trailer add a second set of brakes.</p>

DRUM BRAKES ONLY

<p>Incorrect adjustment of drum brake.</p> <p>Broken components in brake assembly.</p> <p>Leaky or seized brake wheel cylinder.</p>	<p>Adjust all brakes.</p> <p>Replace faulty parts and re-adjust brakes.</p> <p>Replace/rebuild wheel cylinder and replace brake shoes (if contaminated with brake fluid). Clean drums and other hardware, readjust brakes and bleed brake system.</p>
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PROBLEM: ONE BRAKE OVERHEATING

POSSIBLE CAUSE	REMEDY
Drum brake adjusted too tightly.	Readjust, check all brakes.
Disc brake caliper does not permit brake pads to release.	Check Caliper. Sections must be free to move apart. If frozen, remove and free up. Caliper piston may freeze up and prevent pads from retracting. Clean contaminants out of piston cavity. Replace piston, seal and protective dust cover boot. Bleed system.
Leaky or seized brake wheel cylinder.	Replace/rebuild wheel cylinder and replace brake shoes (if contaminated with brake fluid). Clean drums and other hardware, readjust brakes and bleed brake system.
Damaged or frozen brake mechanism.	Rebuild or replace brake unit.

PROBLEM: BOTH BRAKES OVERHEATING

Isolate the problem to actuator or the brakes as follows:

1. Fully extend actuator.
2. Remove master cylinder reservoir plug.
3. Check that reservoir is properly filled.
4. Manually push the actuator inner member in or use a screwdriver to stroke pushrod. (Be sure to depress the pushrod release button after stroking pushrod).
5. In the first 1/8" of stroke, the reservoir fluid will either remain dead calm or swirl around.

If the fluid swirls:

Fluid is allowed to return to reservoir when actuator is extended.
Actuator is functioning properly, troubleshoot brakes.

POSSIBLE CAUSE	REMEDY
Drum brakes misadjusted.	Adjust brakes properly.
Trailer stored with actuator compressed; rust has caused both brakes to freeze up.	Remove brakes. Clean, repair or replace components as necessary.
Inadequate brakes for towed load or driving conditions.	If you have a tandem axle trailer add a second set of brakes.
Pinched or kinks in brake lines.	Check brake lines and replace as necessary.

<p>If fluid does NOT move: Brake system is remaining pressurized and there is an actuator problem. Troubleshoot actuator.</p>	
POSSIBLE CAUSE	REMEDY
Pulled breakaway cable not reset	Reset breakaway cable.
<p>For each of the following the actuator inner member must be removed. Follow the instruction in "HOW TO TAKE APART AND ASSEMBLE THE ACTUATOR".</p>	
<p>Fluid return hole in master cylinder clogged or mispositioned.</p> <p>Corrosion in master cylinder freezing up piston or not allowing it to fully retract, usually caused by trailer stored with actuator compressed.</p> <p>Other malfunction or damage keeping the master cylinder piston from retracting.</p>	<p>Troubleshoot. Replace parts as necessary.</p>
<p>PROBLEM: CANNOT BACK UP TRAILER [For trailers with automatic brakes lockout (Solenoid valves).]</p>	
POSSIBLE CAUSE	REMEDY
<p>Poor ground.</p> <p>Faulty Power Wire.</p> <p>Faulty solenoid.</p>	<p>Check grounding connection on trailer, clean and remove any corrosion around grounding connection area.</p> <p>Check wire harness to be sure +12 volts is coming to the solenoid blue wire when the tow vehicle is in reverse.</p> <p>Solenoid won't "click" when power is applied, replace solenoid.</p>

TAKING APART AND ASSEMBLING THE ACTUATOR

WARNING

DISMANTLING ACTUATOR

Note: Read and understand this section before attempting to disassemble actuator.

- Extend actuator and unscrew brake line fitting from rear of master cylinder. Note: Brake fluid escaping from master cylinder and brake line will damage paint. Care should be taken to protect painted surfaces.
- Remove the two 5/16" bolts that attach the brake away lever assembly to the top of the actuator outer housing. Remove the lever from the housing by sliding it backwards until the cross pin on the lever can fit through the T-slot on the housing.
- Remove one retaining ring and washer from each of the four pins located on the side of the actuator outer housing and slide pins out.
- Pull on inner slide assembly to remove from outer housing. Internal components can now be removed and dismantled for inspection, maintenance or repair or the entire inner slide assembly can be replaced.

WARNING

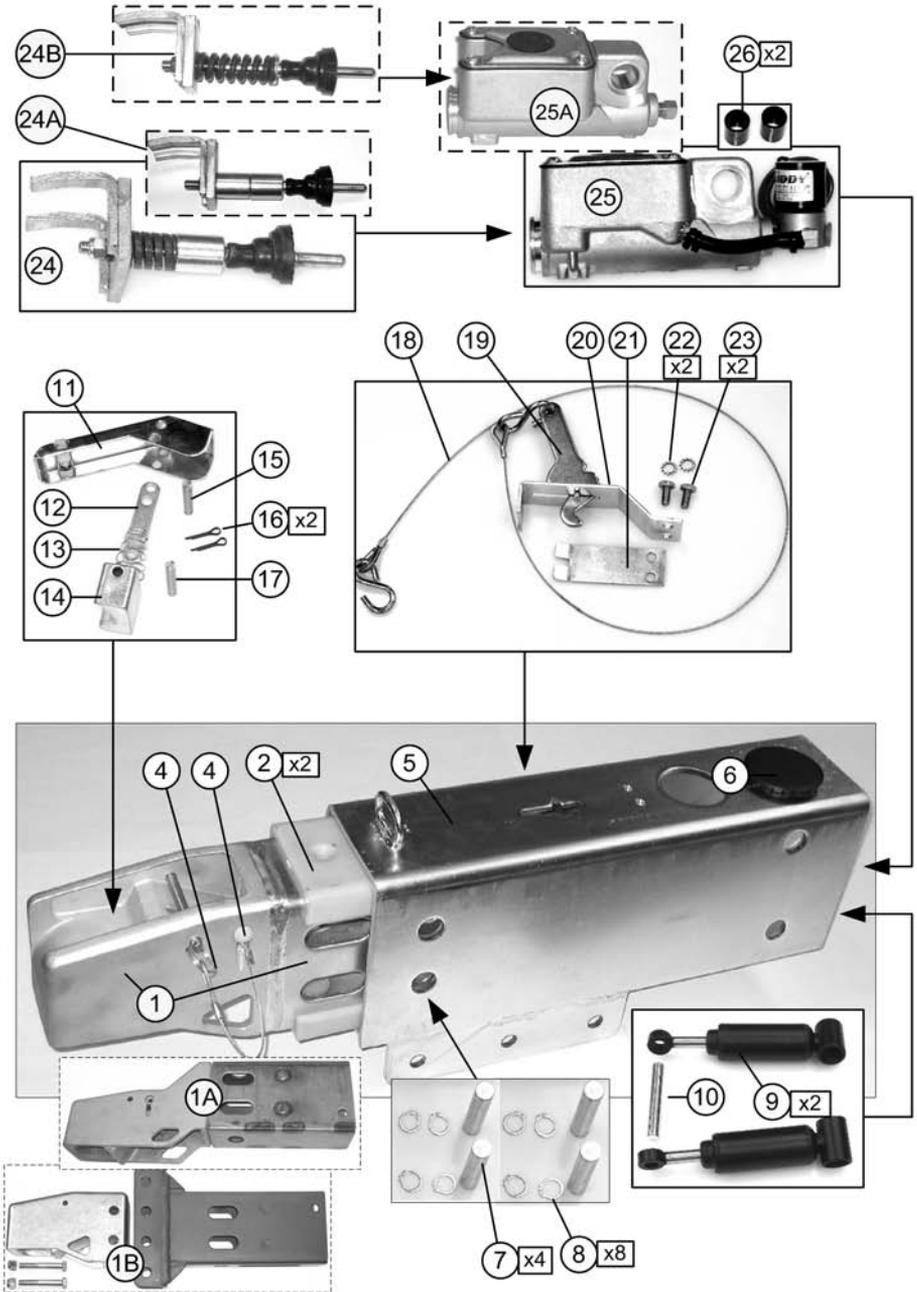
ACTUATOR ASSEMBLY

- Before the inner slide assembly can be inserted into the outer housing, all internal components must be assembled and placed in their proper position.
- Lightly grease upper and lower wear pads before assembly.
- If the back of the outer housing is accessible, slide the inner slide assembly into the outer housing and from the back side of the outer housing, reach in and guide the master cylinder onto the welded shelf support. Insert lightly greased pin through rear top hole in the outer housing to hold master cylinder and black plastic spacer tubes in place.
- If the back of the outer housing is not accessible, first install master cylinder (with pushrod and black plastic spacer tubes attached) into the outer housing and set on welded shelf support. Insert lightly greased pin through rear top hole in the outer housing to hold master cylinder and black plastic spacer tubes in place. Slide the inner slide assembly into the outer housing.
- Insert lightly greased pin through rear bottom hole in the outer housing to hold shock absorber place.
- Insert lightly greased pins through the two forward top and bottom holes in the outer housing.
- Assemble washers and retaining rings on all pins.
- Install brake away lever assembly on top of outer housing and secure with the two 5/16" bolts.
- Connect brake line fitting.
- Bleed brake system

MODEL UFP160 ACTUAL PARTS LIST

KEY NO.	PART NO.	PARTS	Q'TY
1	19050S	IM, STRAIGHT, PLATED	1
1A	19050D	IM, DROP, PLATED	1
1B	19050B	IM, BOLT-ON,W/COUPLER, INNER SLIDE & 2 BOLTS 9/16-12 X 4.5" + 2 LOCK NUTS	1
2	19023	SLIDE BEARING	2
3	19041	LANYARD, HITCH PIN, SAFETY	1
4	19059	RIVET, SNAP, LANYARD	1
5	19034	OUTER CASE ASSEMBLY, BOLT-ON	1
6	19010	CAP, PLASTIC	1
7	19014	PIN, SHOCK ABSORBER, REAR	4
8	32262	RETAINER RING	8
9	32306	SHOCK ABSORBER	2
10	19003	PIN, SHOCK ABSORBER, FRONT	1
11	19066	LATCH HANDLE W/ DEAD BOLT	1
12	19067	LINK, BALL LOCK/LATCH	1
13	19068	SPRING, LINK, LATCH HANDLE	1
14	19069	BALL LOCK SUPPORT	1
15	19092	PIN, LATCH HANDLE	1
16	19091	COTTER PIN, LATCH PIN	2
17	19072	PIN, BALL LOCK SUPPORT	1
18	19005	BREAKAWAY CABLE ASSEMBLY	1
19	19006	BREAKAWAY LEVER	1
20	19011	LEVER GUIDE	1
20A	32522	DECAL, BREAKAWAY LEVER, RED/GREEN	1
21	19012	SAFETY STOP PLATE	1
22	19009	TOOTH WASHER	2
23	19008	BOLT, HEX 5/16 - 18, 1/2"	2
24	19073	TANDEM DISC PUSH ROD ASSY	1
24A	19074	TRIPLE DISC PUSH ROD ASSY	1
24B	19075	DRUM BRAKE PUSH ROD ASSY	1
25	34762	M/C-E-DISC ASSY	1
25A	32747	M/C-S, 1" DRUM ASSY	1
26	19018	SPACER, M/C,A160	2
27	34500	SOLENOID VALVE WITH FITTINGS	1
28	34508	REVERSE VALVE DRAIN TUBE	1
29	32269	NYLON CABLE TIE	2

MODEL UFP ACTUATOR PARTS BREAKDOWN



ACTUATOR DEFINITIONS

ACTUATOR - The device on the front of the trailer, which operates the trailer's brakes in proportion to the tow vehicle stopping.

GROSS VEHICLE WEIGHT RATING (GVWR) - This rating is found on the trailer's identification plate. The rating includes the total weight of the trailer and all cargo that it is carrying.

A-160 ACTUATOR - An actuator manufactured by UFP with a maximum trailer GVWR of 16,000 lbs and maximum tongue load of 1,000 lbs.

COUPLER - The portion of the actuator that receives and secures the tow vehicle hitch ball during towing.

MASTER CYLINDER - A hydraulic device in the actuator that supplies brake fluid under pressure to the trailer's brakes in proportion to an input force.

VEHICLE COMBINATION - The combination of the tow vehicle and the trailer.

HITCH - An apparatus attached under the rear of the tow vehicle that transfers the trailer's tongue and towing loads to the tow vehicle.

HITCH BALL - A round ball on a shank attached to the hitch of the tow vehicle used to connect the trailer to the tow vehicle.

SAFETY CHAINS - An assembly, which provides a secondary means of connection between the rear of the towing vehicle and the front of the trailer.

WEIGHT DISTRIBUTING HITCH - A device that transmits the tongue load of the trailer from the rear wheels of the tow vehicle to the front wheels of the tow vehicle.

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) J684 STANDARD - This SAE Standard includes couplings, hitches, and safety chains used in conjunction with all types of trailers or towed vehicles whose Gross Vehicle Weight Rating (GVWR) does not exceed 10,000 lbs.

TRAILER SWAY CONTROL DEVICES - After market devices intended to eliminate or control the amount of trailer sway (side to side movement) during towing.

TONGUE WEIGHT - A portion of the total trailer weight that is supported by the coupler.

LOAD RATING - The maximum load that a component or device can safely carry or support without failure.

OUTER CASE OPTIONS AND AVAILABLE HITCH CONFIGURATIONS



WELD-ON OUTER CASE



BOLT-ON OUTER CASE



2 5/16" STRAIGHT RATED AT 16000#



2 5/16" DROP RATED AT 16000#



2 5/16" BOLT RATED AT 20000#



**ADJUSTABLE
CHANNEL RATED AT 16000#**

TWO YEAR LIMITED WARRANTY A-160 BRAKE ACTUATOR

The actuator is guaranteed against defects in materials and workmanship under normal use and service for a period of two years from manufacture date of trailer. This warranty applies to first owner only.

Limitations of Coverage

This warranty does not cover:

- Normal wear and tear, including corrosion
- Damage caused by accidents, overload, abuse, modification or improper use of product.
- Loss of use.

This warranty is limited to defective parts replacement only. Charges for installing replacement parts, damage incurred to other equipment as well as incidental or consequential damages connected therewith are excluded. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

Repair or Replacement Procedure

If a failure or defect occurs during the warranty period, promptly contact warrantor's (UFP) customer service department. Until such notice is received, warrantor will not be responsible for any repair or replacement costs. UFP, at its option, may require return of the component in question to the factory, transportation charges prepaid. UFP will replace, FREE OF CHARGE, either the entire actuator assembly or the part that proves defective, at its option. Any part found not to be defective will be returned freight collect with an explanation. Installation of parts and adjustment of brake systems MUST be performed by a skilled brake mechanic and service manual instructions must be followed.

Vehicle identification Number (VIN)

The VIN is a 17 digit number located on the trailer identification label. The label is located on the left side of the trailer. Be sure to include the VIN number in all communications with Warrantor.

Purchaser's Rights

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Product improvement

UFP has a policy of continuous product improvement. We reserve the right to change or improve the design of our products without assuming an obligation to modify any product previously manufactured.



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**Model A-160
41237**