

Model: _____ SN: _____



AMULET MANUFACTURING COMPANY

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amulet.com

PowerBrute™

PowerClamp™

INSTALLATION & OPERATION MANUAL

800-526-8538

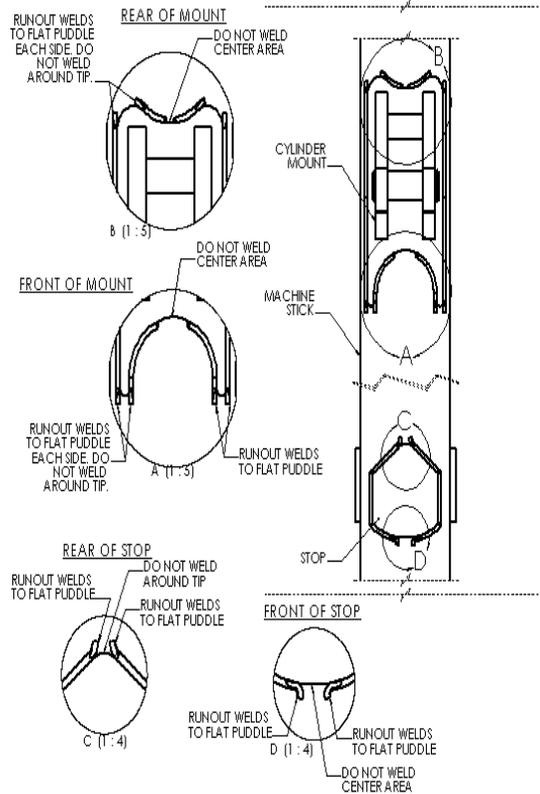


This booklet contains general installation, assembly and proper use of the Amulet **PowerBrute™** and **PowerClamp™**

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**WELD DIAGRAM:
G2 POWERCLAMP**



Please READ this manual carefully and completely to familiarize yourself with the correct operation and installation of this unit.

NOTE: All references to left and right refer to the operator's point of view as the person is sitting in the operators seat, facing the backhoe bucket.

WARRANTY

Amulet Manufacturing Company warrants all non-ST* model products for backhoes, excavators, and loaders to be free from defects in material and workmanship for twenty-four (24) months** from the date of delivery to the original purchaser with the exception of hydraulic cylinders and hydraulic components (valves, fittings, hoses, etc.) which are warranted from defects in material and workmanship for a period of twelve (12) months. The warranty is limited to replacement of such parts as shall appear to Amulet Manufacturing Company upon inspection, at point of manufacture, to be defective in material or workmanship, and providing further that Product has been installed and operated in accordance with Amulet Manufacturing Company's provided installation and operating instructions.

* The Amulet ST model thumb is warranted for twelve (12) months from the date of delivery to the original purchaser.

** The Amulet SG model StickGrip is warranted for the original purchasers machine lifetime.

The warranty shall not extend to those pins used in lieu of OEM pins whose function is to pivot our attachment to the parent machine, wherein, Amulet Manufacturing Company has no control of pin size. Nor shall this warranty extend to those products which have been altered or repaired without prior written consent of Amulet Manufacturing Company. A written statement covering any alleged defect must accompany all parts returned for warranty consideration to Manufacturing Company via prepaid freight.

Amulet Manufacturing Company replacement parts will be invoiced by Amulet Manufacturing Company and will be delivered F.O.B. Amulet Manufacturing Company's production facility. Credit will be allowed for parts determined by Amulet Manufacturing Company upon inspection to be defective.

IT IS EXPRESSLY AGREED THAT THIS WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF WARRANTY OF MERCHANTABILITY INCLUDING BUT NOT LIMITED TO:

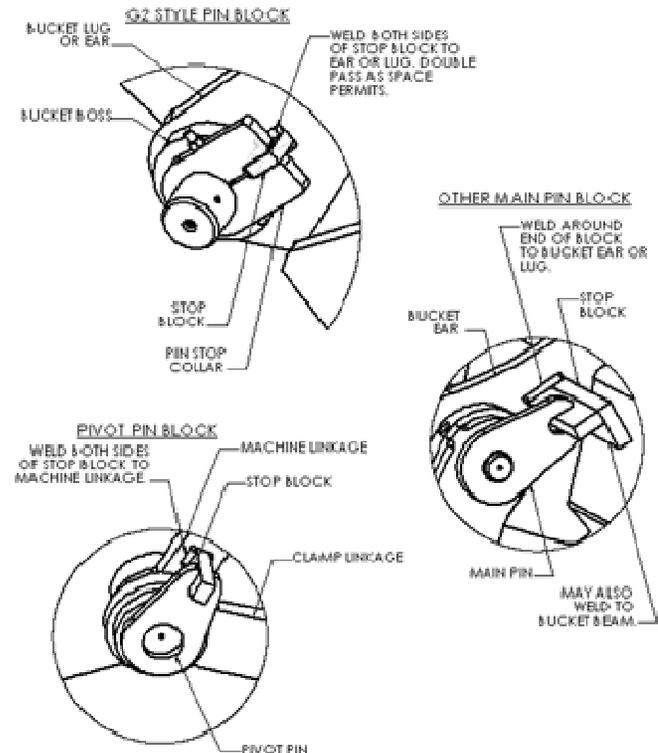
- A. DAMAGE, LOSS OR DELAY CAUSED BY DEFECTIVE MATERIAL AND/OR WORKMANSHIP.
- B. SERVICE MILEAGE OR SERVICE LABOR IN CONNECTION WITH ANY CLAIM CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP.

Amulet Manufacturing Company does not assume or authorize any other person to assume for it any other liability in connection with its products.

NOTICE: The above-mentioned warranty is void in all respects when, in Amulet Manufacturing Company's judgment, the product has been subjected to misuse, accident, negligence or abuse. Normal product wear is not covered under warranty. This warranty becomes void if maximum flow and/or pressure ratings are exceeded. All claims must be made in writing. Any and all Amulet warranty reimbursements will be given in the form of account credit. Amulet Manufacturing Company reserves the right to replace, repair or credit any product or failed part based on Amulet's discretion.

AMULET MANUFACTURING COMPANY MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE.

STOP BLOCK (LOCK) WELD DIAGRAM



Installation should only be performed by a qualified individual or individuals certified in welding and trained to observe safe electrical work practices according to OSHA 1910.332 (or equivalent standards).

WELDING PROCEDURES

For all weld segments, Use 1/8" rod, E-7018 or equivalent. Make 3/8" passes, as indicated in weld diagrams.

1. Disconnect the machines battery cables to avoid possible damage to the machines computer.
2. Prep all weld contact surfaces by removing paint and corrosion with a coarse wire brush or grinder.
3. Review the following diagrams
4. Mark all weld segment locations with chalk.
5. Weld the ends of the mount and stop base plate as shown in details. Run out welds to a flat puddle 19mm to 25mm - 3/4" to 1" past the plate ends and do not weld 19mm to 25mm - 3/4" to 1" of the center of the plate end.

Inspect all of the weld segments and repair any flaws.

CYLINDER SPECIFICATION CHART

Part#	Gal/min	Operating PSI	Operating/Max Bar
67400	22.41	3150	217.18/310.26
67500	27.67	3150	217.18/310.26
67600	33.48	3150	217.18/310.26
65509	12.29	3150	217.18/310.26
65636	16.78	3150	217.18/310.26
65015	18.87	3150	217.18/310.26
89034540	35.25	3150	217.18/241.32
89034550	27.40	3150	217.18/241.32
89034581	36.13	3150	217.18/241.32
62015	9.50	2150	144.79/206.84
61550	2.18	2150	144.79/206.84
27709	6.77	2150	144.79/206.84

IMPORTANT! PowerBrute and PowerClamp thumb cycle times (speed) should be set to match bucket cycle times. This is adjusted by turning cylinder flow settings (GPM) higher or lower.

***Failure to correctly set thumb cycle time may void warranty, as damage to the thumb may occur.**

INSTALLATION SAFETY

Before installing the Amulet **PowerBrute™** or **PowerClamp**, read this **installation manual carefully**. Always wear OSHA approved hard hat, safety glasses, steel-toed shoes, and gloves. To avoid injury to others, keep people not directly involved with the thumb installation well out of the way. Never place any part of your body under any component of the **PowerBrute™** or **PowerClamp™** or the machine while the device is being installed. During installation it may be necessary to operate the clamp before final assembly, to insure that all parts rotate without binding.

DO NOT place any part of your body, particularly hands and fingers, near the **PowerBrute™** or **PowerClamp™** when it is being operated at any time. During the entire installation the bucket should be set on the ground, the parking brake set and the engine shut off. During welding, disconnect the machine's battery to avoid damage to the machine's electronics and computer.

NOTE: Installation should only be performed by qualified people certified in welding and trained to observe safe electrical work practices according to OSHA 1910.332.

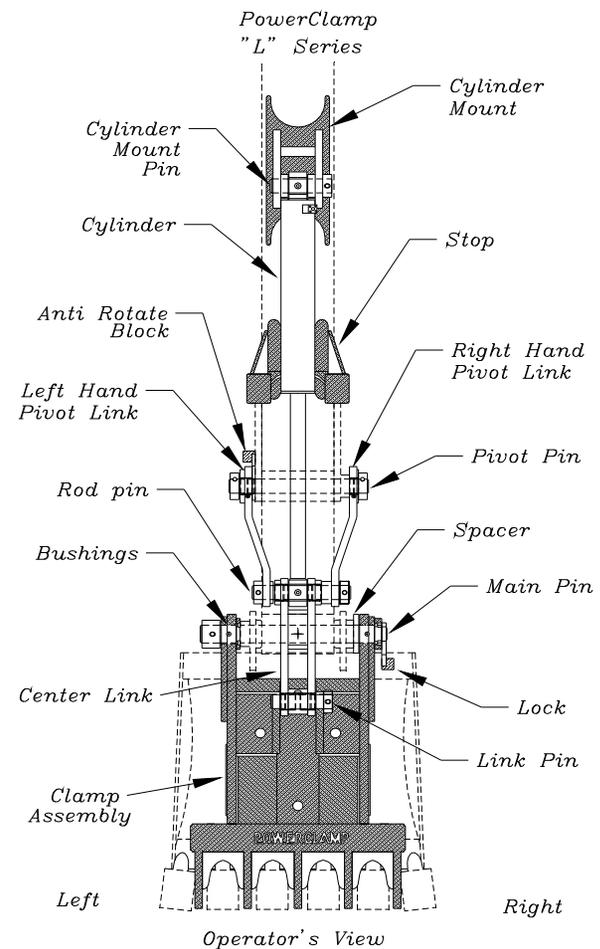
OPERATION SAFETY

- Never allow unqualified personnel to operate the tractor; be sure that all operators read this manual and are trained in the proper use of the equipment they are assigned to operate before commencing work.
- Before operation, conduct visual and operational checks on all machine systems and operating controls. Check all pins, bushings, washers, snap rings, cotter pins, nuts, bolts, retainers and hoses for being properly installed and secure. **Should any parts unfasten, STOP! DO NOT USE** the unit until all defective or missing parts are properly replaced.
- Always close the **PowerBrute™** or **PowerClamp™** when not in use.
- Learn to quickly stop the machine from operation in case of an emergency.
- Keep workers outside of the machine's swing area (the radius of the excavator or backhoe arm as it swings) and blind spots (areas to the sides or rear of the machine that are blocked from or beyond the operator's range of vision). The **PowerBrute™** or **PowerClamp™** is not intended to lift objects over or near people. **DO NOT EVER** allow people to walk, work or stand under a piece of raised equipment or lifted object.
- Do not permit workers on foot to approach the hydraulic excavator or backhoe loader until they signal the operator to shut down the machine and receive acknowledgment from the operator. Use spotters or signal persons around operating equipment when necessary.

- When lifting, do not exceed load capacity of the machine or the machine may tip. Before lifting heavy objects, the operator must know the machines rated lifting capacity. The added weight of the Amulet thumb and any other attachments should be subtracted for actual lifting capacity. For lifting capacities of specific machines, visit the manufacturers web site or contact your local equipment dealer.
- Contact local utilities and other responsible parties to locate overhead and underground utility lines before beginning work. Avoid working near overhead power lines. If you must work near them, develop a plan to avoid contact and to follow OSHA regulations for minimum clearance [29 CFR* 1926.550(a)(15)].
- Continually evaluate safety programs to address changing conditions at the worksite.
- Before dismounting the machine, always lower the stick until the bucket is resting on the ground, turn off the engine, set the brake and remove the key.
- The Amulet **PowerBrute™** or **PowerClamp™**, although very strong, should always be used with a certain amount of common sense when grasping material and objects. Always try to clamp objects in the center of mass and/or weight balance. Lifting awkward or unwieldy objects improperly may cause serious damage to the **PowerBrute™** or **PowerClamp™** or the machine, which will not be covered under warranty. Never attempt to reposition the backhoe or excavator using the **PowerBrute™** or **PowerClamp™**

IMPORTANT! Stabilization of the backhoe or excavator is REQUIRED before commencing work. Failure to do so may result in machine tip and possible injury to the operator.

NOTE: Installation of the **PowerBrute™** or **PowerClamp™** on rubber-tired loader/backhoes with extendable dippers may cause a slight tractor imbalance. Always consider the weight of the attachments for lifting capacities. To improve stability, counterweight may need to be added to the machine or Calcium Chloride (CaCl₂) be added to the front tires.



PARTS LIST INFORMATION

All Amulet hydraulic thumbs are shipped with an accompanying Parts List. The Parts List is normally sent inside this booklet. Please note that the accompanying Parts List is applicable to your specific clamp model only. Do not remove this Parts List from the Operation & Installation Manual. Please contact Amulet Manufacturing Company should you require additional copies of the Parts List. Our Customer Service Representative will require the product model and serial number. The Parts List offers information for the specific installation and assembly of the product as well as the source for ordering replacement parts.

(cont.)

time throughout the thumbs rotation.

11. Weld the clamp stop and cylinder mount to the stick, following the weld procedures on page 13 of this booklet. Weld parallel to the dipper, unless other special welding instructions are included. Do not weld perpendicular to the dipper arm.

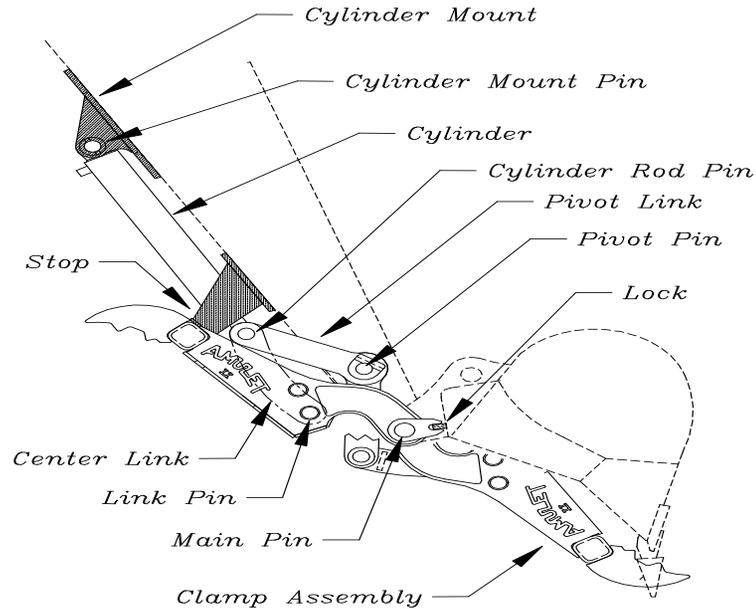
12. Connect the hoses to the thumb hydraulic cylinder. For hose routing and hydraulic component installation, follow the instructions provided by the hydraulic kit manufacturer. With the bucket open fully, slowly open and close the PowerClamp thumb several times to remove air from the system while checking for any issues, being careful not to apply maximum cylinder pressure.

13. For machines under 20,000 lbs. thumb cylinder secondary relief pressure must be set at 70% of line (bucket curl) pressure, not to exceed 2,150 psi. For machines over 20,000 lbs. the thumb cylinder secondary relief must be set at 70% of line (bucket curl) pressure, not to exceed 3,150 psi.

IMPORTANT! Refer to “Cylinder Settings” chart on page 13 for recommended flow and relief pressures specific to your PowerClamp thumb cylinder. Damage caused by improper relief pressure settings will not be covered under warranty.

14. Grease all pins and pivot points liberally, tighten all pins and retainers.

*PowerClamp
“L” Series*



Right Side View

MAINTENANCE

PowerBrute™ and PowerClamp™

DAILY:

1. Grease all zerk fittings.
2. Check and tighten all pin retainers.
3. Check hydraulic components for any leaks. Correct as required.

WEEKLY:

1. Inspect the clamp, mounts and stick (dipper) for any evidence of weld failure, twisting or fatigue.
2. Inspect hydraulic hoses for wear, check hose routing and correct if the hoses are hanging or appear vulnerable to damage.

Should you have any questions regarding proper maintenance, contact;

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OPERATION

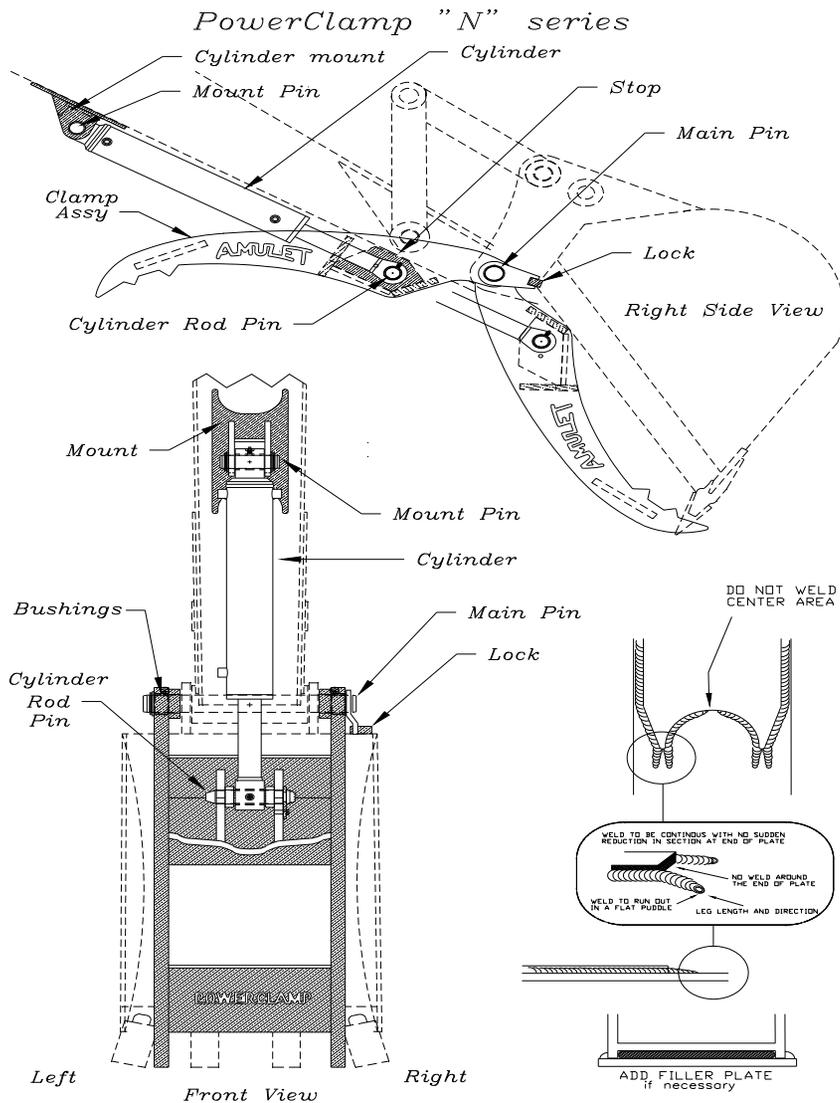
The Amulet **PowerBrute™** and **PowerClamp™** hydraulic thumbs can open up an entirely new world of backhoe/excavator capability and project efficiency. Both thumb models should offer you many years of dependable service if installed, used and maintained properly.

- Long or unwieldy objects **MUST** be grasped in the center of mass or weight balance. Grasping objects at one end or significantly offset can generate forces great enough to bend, twist or break the clamp or excavator dipper. **WARRANTY WILL NOT COVER DAMAGE CAUSED BY UNEVEN LOADS.**
- **PowerBrute™** and **PowerClamp™** thumbs are designed to grasp objects that are already free and loose. These are **NOT** designed or built to pry or rip objects which are firmly attached or imbedded. **NOT** use this device for crushing or compacting objects or material.
- When using **PowerBrute™** or **PowerClamp™** thumbs for projects such as demolition, please exercise a great degree of caution. Grasping or removing overhead structures can result in the unanticipated collapse of the structure or upset the stability of the backhoe/excavator.
- An experienced operator using the **PowerBrute™** can grasp, and by then curling the bucket, rotate objects. **Do not attempt to curl clamp and bucket at the same time using the PowerBrute™.** Since the clamp and bucket utilize separate main hinge pins (pivot points), the grasped objects may lose their position and fall out unexpectedly.

INSTALLATION INSTRUCTIONS

1. **READ THIS ENTIRE MANUAL CAREFULLY AND COMPLETELY.**
2. Check the contents of the PowerClamp assembly, acquainting yourself with all of the parts as described in the accompanying installation sheet/diagram, specific for your thumb model.
3. With the bucket resting on the ground, remove the original factory main pin. Align the clamp assembly over the bucket, then insert the longer main pin provided. Fasten this main pin with the appropriate retainers provided. On some models, the main pin must be locked to the bucket with an anti-rotation peg which is to be securely welded to the bucket or coupler.
4. Most PowerClamps for medium/large excavators use a thumb stop, which prevents the clamp body from contacting the cylinder while in the stored position. The stop is to be mounted on the bottom of the stick as shown in the accompanying spec sheet. Rotate the clamp body towards the stick to locate the exact position of the stop. Depending on the model of the PowerClamp, the stop may be a pedestal-type design, which allows the clamp toothbar to rest against it, or it may be a solid “diamond-shaped” plate, which allows the thumb center plate to rest against it. Clean the area of any paint and scale and tack weld the stop to the center of the stick. For excavator dippers equipped with rock strips, the rock strips may need to be partially or completely removed if they interfere with thumb rotation or any of its components. In this case, the clamp body will now provide lower dipper protection.
5. Remove the lower guide link (pivot) pin and insert the longer pivot pin provided. Some machines may have a pin-retaining collar welded to one side of the factory guide link, which may have to be removed for thumb installation.
6. Install the two supplied pivot links oriented as shown in the model-specific diagram. Fasten this pivot pin with the retainers included.
7. Retract the hydraulic cylinder all the way, then extend the rod slightly (see model-specific installation sheet), to allow internal cylinder cushion to function properly.
8. Install the supplied center link between the two pivot links and cylinder rod pin. If spacers are provided, position them between these links. Pin the rod end of the cylinder using the pins and retainers provided. Attach the supplied cylinder mount to the barrel-end of the thumb cylinder.
9. With the clamp near the stick and against the stop, lower the thumb cylinder until the cylinder mount contacts the bottom of the stick. Raise the cylinder mount and prep this area, removing all paint and scale. Reposition the cylinder mount, centered perfectly against the bottom of the stick. Tack weld the cylinder mount in place.
10. Rotate the clamp assembly through its entire cycle, checking for any interferences. Should any adjustments be necessary, make these prior to final welding. Note: The cylinder and/or cylinder rod should never contact the stick or clamp assembly at any

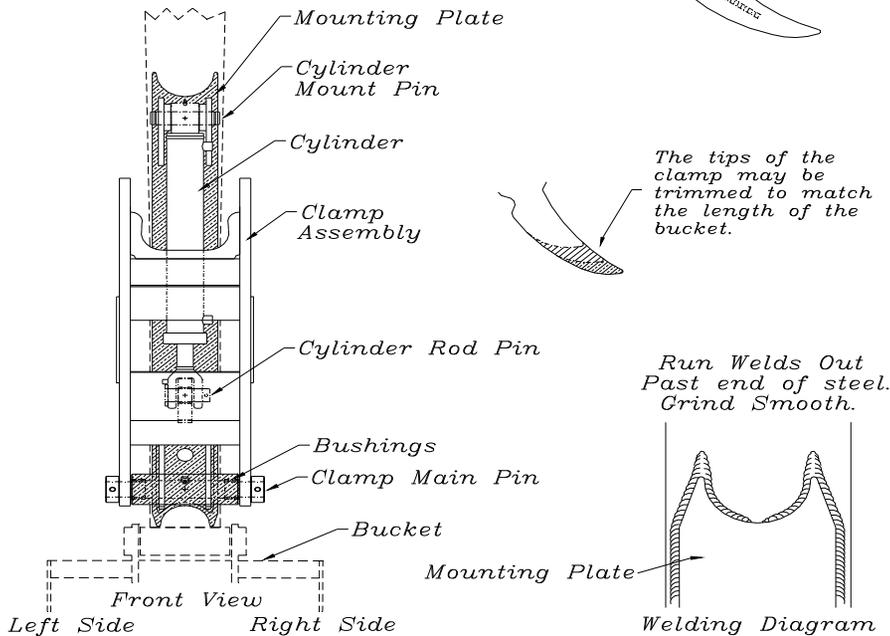
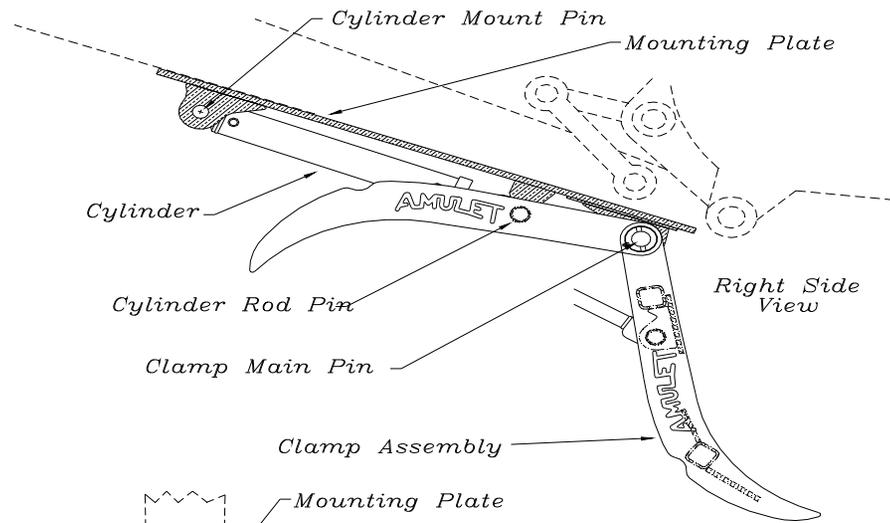
INSTALLATION INSTRUCTIONS



NOTE: Model configurations and designs may vary from type shown.

1. **READ THIS ENTIRE MANUAL CAREFULLY AND COMPLETELY.**
2. Check the contents of the **PowerBrute™** assembly, acquainting yourself with all of the parts described in the supplied *Parts List* specific for your model. If needed, contact Amulet for replacement *Parts List*.
3. Curl the stick (dipper) toward the machine so that it is as close to being horizontal with the ground as possible, with the bucket fully closed. Place the stick near the ground. The bottom of the stick should be facing up.
4. Position the main pin mount centered on the stick and determine the optimum distance from the thumb main pin to the bucket main pin, with emphasis on trying to position the thumb main pin carrier as close to the bucket ears/coupler as possible without causing interference with bucket ears/coupler in bucket curl or transport position. Slide the main pin mount towards the end of the stick until it contacts the bucket ears (or coupler if applicable). Double check that the bucket cylinder is fully extended. Move the mount back ~ 1/2" – 1" for clearance. This distance may vary based on thumb model and excavator model and dipper configuration.
5. Once positioned, clamp the main pin mount flat and square to the stick. Double check and then tackweld. Should any adjustments be necessary, make these changes before proceeding.
6. To position the cylinder mount, retract the cylinder all the way, then extend the rod ~ 1/2" (see specific model instruction sheet) to allow the cylinder cushion to function properly. Pin the rod end of the cylinder to the clamp assembly using the pins and retainers provided and the barrel end to the cylinder mount, ports oriented properly.
7. Tack weld the cylinder mount to the bottom of the stick sufficiently so that the clamp assembly can be rotated throughout its entire range of motion. Check for any interference. Adjust as necessary. Note: The cylinder and/or rod should never contact the dipper or clamp assembly.
8. Connect the excavators hydraulic hoses to the thumb hydraulic cylinder. With the bucket open fully, slowly open and close the thumb several times to remove air from the system, while checking for any interferences.
9. Weld main pin mount and cylinder mount to dipper using 1/8" rod, E-7018 electrode or equivalent, making several 3/8" passes. Position the clamp body stop mount to function accordingly. Do not weld perpendicular to the dipper.
10. **IMPORTANT!** Secondary relief should be set at 70% of line (bucket curl) pressure or 3,150psi., whichever is lower.
11. See specification chart on page 13 for proper flow rate settings.
DAMAGE FROM IMPROPER RELIEF PRESSURE AND OR FLOW RATE SETTINGS WILL NOT BE COVERED UNDER WARRANTY.
12. Tighten all fasteners.
13. Lubricate all grease points liberally.

PowerBrute



NOTE: Model configurations and designs may vary from type shown.

PowerClamp™ NON-LINKAGE "N & NC" TYPE

INSTALLATION INSTRUCTIONS

1. **READ THIS ENTIRE MANUAL CAREFULLY AND COMPLETELY.**
2. Check the contents of the PowerClamp assembly, acquainting yourself with all of the parts as described in the accompanying installation sheet/diagram, specific for your thumb model.
3. With the bucket resting on the ground, remove the original factory main pin. Align the clamp assembly over the bucket, then insert the longer main pin provided. Fasten this main pin with the appropriate retainers provided. On some models, the main pin must be locked to the bucket with an anti-rotation peg which is to be securely welded to the bucket or coupler.
4. Most PowerClamps for medium/large excavators use a thumb stop, which prevents the clamp body from contacting the cylinder while in the stored position. It is to be mounted on the bottom of the stick as shown in the accompanying spec sheet. Rotate the clamp body towards the stick to locate the exact position of the stop. Clean the area of any paint and scale and tack weld the stop to the center of the stick.
5. Retract the hydraulic cylinder all the way, then extend the rod slightly (see model-specific sheet for actual dimension). Pin the rod end to the clamp body using the pins and hardware provided. Attached the cylinder mount to the barrel end of the cylinder, ports oriented accordingly.
6. With the clamp near the stick, contact the stop, raise the cylinder until the cylinder mount contacts the bottom of the stick. Clean this area, removing any paint or scale. Reposition cylinder with cylinder mount centered against the bottom of the stick. Tack weld cylinder mount once perfectly aligned.
7. Rotate clamp through its entire cycle, check for interferences. The cylinder and/or rod should not contact the stick.
8. Weld clamp stop and cylinder mount to the stick using E-7018 rod or equivalent, making multiple 3/8" passes. Do not weld perpendicular to stick!
9. Attach the hydraulic hoses to the thumb cylinder. With the bucket open fully, slowly rotate the PowerClamp several times to remove air from the system, being careful not to apply maximum pressure.
10. For machines **under 20,000 lbs.** thumb cylinder secondary relief pressure must be set at 70% of line (bucket curl) pressure, **not to exceed 2,150 psi.** For machines **over 20,000 lbs.** the thumb cylinder secondary relief must be set at 70% of line (bucket curl) pressure, **not to exceed 3,150 psi.** **IMPORTANT! Refer to "Cylinder Settings" chart on page 13 for recommended flow and relief pressures specific to your PowerClamp thumb cylinder. Damage caused by improper relief pressure settings will not be covered under warranty.**
11. Grease all pins and pivot points liberally, tighten all pins and retainers.