

Power Series Linkage Tools

GLS, GRS, GCC, GMP

SAFETY, OPERATOR'S & PARTS MANUAL



Linkage Shear (GLS)



Rebar Shear (GRS)



Concrete Cracker (GCC)



Mechanical
Pulverizer (GMP)

CONTACT INFORMATION

Genesis Attachments

1000 Genesis Drive
Superior, WI 54880 USA

Toll Free: 888-SHEAR-IT
(888-743-2748)

Phone: 715.395.5252

E-mail:
info@genesisattachments.com

Europe/Africa/Middle East Genesis GmbH

Teramostrasse 23
87700 Memmingen, Germany

Phone: +49 83 31 9 25 98 0
Fax: +49 83 31 9 25 98 80
genesis-europe.com

E-mail:
info@genesis-europe.com

Asia Pacific Representative Office

24 Upper Serangoon View #12-28
Singapore 534205

Phone: +65 9673 9730

E-mail:
tchoo@genesisattachments.com

Central America & Colombia

Cra 13A #89-38 / Ofi 613
Bogota, Colombia

Phone: +57 1 610 8160 / 795 8747

E-mail:
contact@themsagroup.com

View and download all manuals: genesisattachments.com/manuals
Patents: genesisattachments.com/products/patents

PREFACE

To ensure years of safe, dependable service, only trained and authorized persons should operate and service your Genesis attachment. It is the responsibility of the product's owner to ensure the operator is trained in the safe operation of the product and has available this manual for review. It is the responsibility of the operator and maintenance personnel to read, fully understand and follow all operational and safety-related instructions in this manual. The attachment should not be operated until you have read and fully understand these instructions. Always use good safety practices to protect yourself and those around you.

Important

This operator's manual must accompany the attachment at all times and be readily available to the operator.

Manual Replacement

Should this manual become damaged or lost or if additional copies are required, immediately contact any authorized Genesis dealer or the Genesis Service Department at 888-743-2748 or 715-395-5252 for a replacement.

Registration Form

The Warranty Registration Form must be filled out by the dealer or customer and returned to Genesis indicating the date the attachment went into service.

Possible Variations

Genesis cannot anticipate every possible circumstance that might involve a potential hazard as the owner's requirements and equipment may vary. Therefore, the warnings in this publication and on the product may not be all-inclusive, and you must satisfy yourself that the procedure, application, work method or operating technique is safe for you and others before operating.

Public Notice

Genesis reserves the right to make changes and improvements to its products and technical literature at any time without public notice or obligation. Genesis also reserves the right to discontinue manufacturing any product at its discretion at any time.

Warranty

All work or repairs to be considered for warranty reimbursement must be pre-authorized by the Genesis Service Department. Any alterations, modifications or repairs performed before authorization by the Genesis Service Department will render all warranty reimbursement consideration null and void without exception. See page 41 for Warranty Claim Procedures.

Improper operation or improperly performed maintenance may render any warranty null and void.

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SAFETY STATEMENTS



This symbol by itself or used with a safety signal word throughout this manual is used to call attention to instructions involving your personal safety or the safety of others. Failure to follow these instructions can result in injury or death.



DANGER

This statement is used where serious injury or death will result if the instructions are not followed properly.



WARNING

This statement is used where serious injury or death could result if the instructions are not followed properly.



CAUTION

This statement is used where minor or moderate injury could result if the instructions are not followed properly.

NOTICE

This statement is used where property damage could result if the instructions are not followed properly.

OPERATIONAL SAFETY

Read Manual Before Operating or Maintaining the Attachment



Read this manual before attempting to operate the attachment. This operator's manual should be regarded as part of the attachment. For proper installation, operation and maintenance of the attachment, operators and maintenance personnel must read this manual.



WARNING

Serious injury or death could result if appropriate protective clothing and safety devices are not used.

Personal Protection

Use protective clothing and safety devices appropriate for the working conditions. These may include but are not limited to:

- ✓ Hard hat
- ✓ Safety glasses, goggles or face shield
- ✓ Hearing protection
- ✓ Safety shoes
- ✓ Heavy gloves
- ✓ Reflective clothing
- ✓ Respirator or filter mask



Safety matters

Know Your Equipment



Know your attachment's capabilities, dimensions and functions before operating. Inspect your attachment before operating and never operate an attachment that is not in proper working order. Remove and replace any damaged or worn parts.

Before Operating

- ✓ Warn all others in the area that you are about to start operation.
- ✓ Perform the Check the Equipment steps outlined in this manual.
- ✓ Check underneath and around the machine. Make sure all personnel and equipment are clear from the area of operation and equipment movement. Check clearances in all directions, including overhead.
- ✓ Be properly seated in the operator's seat.
- ✓ Do not attempt to operate until you have read and fully understand this manual and the OEM manual for the carrier.

OPERATIONAL SAFETY

Check the Equipment

Before use, check the equipment to ensure it is in good operating condition.

Check the following:

- ✓ Grease fittings. Pump grease at all fitting locations, see page 19.
- ✓ Blades and wear surfaces for wear or damage.
- ✓ Hydraulic fluid level. Add hydraulic fluid as required.
- ✓ Hydraulic hoses and hose connections for wear or leaks. Repair or replace any damaged hoses or connections.
- ✓ All control levers for proper operation.



**GOOD
CONDITION**



WARNING

Serious injury or death could result if warnings or instructions regarding carrier stability and the work area are not followed properly.

Stability

Your Genesis attachment is sized for carrier stability. However, improper operation, faulty maintenance or unauthorized modifications may cause instability.

- ✓ Know the working ranges and capacities of the carrier to avoid tipping.
- ✓ Use the recommended carrier counter weight.

The following conditions affect stability:

- Ground conditions
- Grade
- Weight of attachment
- Contents of attachment
- Operator judgement



For greater stability, knuckle the attachment to bring the load closer to the center of rotation (center of gravity) while lifting. Use extra caution during reaching to avoid tipping.

OPERATIONAL SAFETY

Know the Work Area

Check clearances in the work area. Keep all bystanders at a safe distance. Do not work under obstacles. Always check your location for overhead and buried power lines or other utilities before operation.

Check ground conditions. Avoid unstable or slippery areas. Position the carrier on firm level ground. If level ground is not possible, position the carrier to use the attachment to the front or back of the carrier. Avoid working over the side of the carrier.

To reduce the risk of tipping and slipping, never park on a grade exceeding 10% (one-foot rise over the span of a ten-foot run).

Starting Procedure

Before operating, walk completely around the equipment to make certain no one is under it, on it or close to it. Keep all bystanders at least 75 feet away from the area of operation and equipment movement. Let all other workers and bystanders know you are preparing to start. DO NOT operate until everyone is clear.

Always be properly seated in the operator's seat before operating any carrier controls.

To start:

- ✓ Make sure all controls are in the center (neutral) position.
- ✓ Be properly seated.
- ✓ Slowly operate all functions to check for proper operation and to bleed air from the hydraulic system.

To shut down:

- ✓ Return your Genesis attachment to a rest position on the ground.
- ✓ Shut off the carrier engine.
- ✓ Work controls in all directions to relieve hydraulic pressure, per excavator manufacturer's instructions.



WARNING

Serious injury or death could result if warnings or instructions regarding safe operation are not followed properly.

Place the Load Safely

Do not move the attachment, or anything held in the jaws, over people, equipment or buildings. Do not throw or drop the contents. Operate the controls smoothly and gradually.

OPERATIONAL SAFETY

Safely Operate Equipment

Do not operate equipment until you are trained by a qualified operator in its use and capabilities.

See your carrier's manual for these instructions.

- ✓ Operate only from the operator's seat. Check the seat belt daily and replace if frayed or damaged.
- ✓ Do not operate this or any other equipment under the influence of drugs or alcohol. If you are taking prescription medication or over-the-counter drugs ask your medical provider whether you can safely operate equipment.
- ✓ Never leave equipment unattended with the engine running or with the attachment in a raised position. Apply the brakes before exiting the equipment.
- ✓ Do not exceed the lifting capacity of your carrier.
- ✓ Avoid conditions that can lead to tipping. The carrier can tip when operated on hills, ridges, banks and slopes. Avoid operating across a slope which could cause the carrier to overturn.
- ✓ Reduce speed when driving over rough terrain, on a slope, or when turning to avoid overturning the carrier.
- ✓ Never use the attachment as a work platform or personnel carrier.
- ✓ Keep all step plates, grab bars, pedals and controls free of dirt, grease, debris and oil.
- ✓ Never allow anyone to be around the equipment when it is operating.
- ✓ Do not operate poorly maintained or otherwise faulty equipment. Inform the proper authority and DO NOT resume operation until the problem has been fixed.
- ✓ Do not alter or remove any safety features.
- ✓ Know your work site safety rules as well as traffic rules and flow. When in doubt on any safety issue, contact your supervisor or safety coordinator for an explanation.
- ✓ A heavy load can cause equipment instability. Use extreme care during travel. Slow down on turns and watch out for bumps. The equipment may need additional counter-weights to counterbalance the weight of the attachment.



OPERATIONAL SAFETY

Transporting the Attachment

- ✓ Travel only with the attachment in a safe transport position to prevent uncontrolled movement. Drive slowly over rough ground and on slopes.
- ✓ When driving on public roads use safety lights, reflectors, Slow Moving Vehicle signs, etc., to prevent accidents. Check local government regulations that may affect you.
- ✓ Do not drive close to ditches, excavations, etc., as cave-in could result.
- ✓ Do not smoke when refueling the prime mover. Allow room in the fuel tank for expansion. Wipe up any spilled fuel. Secure cap tightly when done.

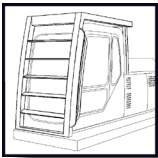
Equipment Condition

Never operate poorly maintained equipment. When maintenance is required, repair or replace parts immediately.



Serious injury or death could result if warnings or instructions regarding working overhead are not followed properly.

Working Overhead



Avoid handling material overhead whenever possible. Safety glass and wire mesh cab guarding must be installed to protect the operator from flying debris that may be created during handling. Falling Object Protection Structures, or FOPS, are necessary for any application where material is to be handled overhead.



Serious injury or death will result if warnings or instructions regarding power lines are not followed properly.

Power Lines

Do not operate the machine near energized power lines. All local, state/provincial and federal regulations must be met before approaching power lines, overhead or underground cables, or power sources of any kind with any part of the carrier or attachment. Always contact the appropriate utility when operating near power lines. The lines should be moved, insulated, disconnected or de-energized and grounded before operating in the area.



Current in high voltage lines may arc some distance from the wire to a nearby ground. Keep all parts of the machine at least 50 feet (16m) away from power lines.

OPERATIONAL SAFETY

Prioritized Oil Flow

Equipment operators must ensure there is prioritized oil flow to the main valves in overhead operations or high reach conditions.

Emergency Situations

Always be prepared for emergencies. Make sure a fire extinguisher is available. Be familiar with its operation. Make sure to inspect and service the fire extinguisher regularly. Make sure a first aid kit is readily available.




Unsafe Conditions

Do not operate if an unsafe condition exists. Stop operation immediately, shut down the machine and report the unsafe condition to the proper authority. Equipment operation and maintenance practices directly affect your safety and the safety of those around you. Always use common sense while operating and be alert to unsafe conditions.

Crystalline Silica Dust

It is recommended to use dust suppression, dust collection and if necessary, personal protective equipment during the operation of any attachment that may cause high levels of dust.

 **DANGER** Exposure to respirable crystalline silica dust along with other hazardous dusts may cause serious or fatal respiratory disease.

IMPORTANT: Concrete and masonry products contain silica sand. Quartz, which is a form of silica and the most common mineral in the Earth's crust, is associated with many types of rock.

Some activities that may have silica dust present in the air include demolition, sweeping, loading, sawing, hammering, drilling or planing of rock, concrete or masonry.

It is recommended to use dust suppression (such as water) or dust collection (such as a vacuum) along with personal protective equipment if necessary during the operation of any attachment that may cause high levels of silica dust.



OPERATIONAL SAFETY



WARNING

Using your Genesis attachment in unauthorized applications may create an unsafe situation and will void the warranty.

Process Material Safely

- Do not process hardened steel material such as tool steel, railroad rail, axles, springs, machined parts or high-strength material. Hardened/high-strength material breaks, rather than shears, which may cause flying debris. It will also cause damaging decompression spikes to your Genesis attachment and base carrier hydraulic systems.
- Do not operate any functions of the carrier while cutting or crushing with your attachment, including boom and drive functions.
- Do not pull down structures with your Genesis attachment. Doing so may cause falling debris or material to break free and exceed the capacities of the carrier, causing a tipping hazard and rotation component failures.
- Do not use rotation to pry or break material. Doing so exerts high back-driving forces and spikes to the rotation circuit components that cannot be cushioned hydraulically. It may also cause motor and gearbox failures. The rotator should only be used for positioning an attachment.
- Do not process pressurized containers unless the main valve has been removed and you are absolutely certain the container is empty.
- Do not process spring loaded brake chambers and automotive struts as the release of compressed springs is extremely dangerous. Nothing made of spring material or containing springs should be processed.

Lift the Load Safely

- The hydraulic system has been preset and tested by your dealer. Do not alter hydraulic settings without consulting an authorized Genesis dealer or the Genesis Service Department. Doing so will void the warranty and may cause structural damage, accidents or tipping.
- Make sure the load is held securely in the jaws. Do not move a loaded attachment if load is loose or dangling. Make sure the load is pinched between the jaws – never cradle a load.
- For greater stability, knuckle the attachment to bring the load closer to the center of rotation (center of gravity) while lifting. Use extra caution during reaching to avoid tipping.

Place the Load Safely

- Do not move the attachment, or anything held in the jaws, over people, equipment or buildings. Place the load gently. Do not throw or drop the contents.
- Operate the controls smoothly and gradually. Jerky controls are hazardous and may cause damage to the carrier.
- Avoid fire hazards. Keep the area clean. Remove all flammable materials from the area during any welding or heating process. Have a fire extinguisher nearby and know how to use it.
- Never substitute pins or bolts. Use factory supplied pins. Replace all bolts with the same size and grade. Failure to do so may cause serious injury or death.
- Use your Genesis attachment only as directed in this manual. Do not use the attachment to lift and move other objects. Doing so may cause instability and tipping.

ATTACHMENT MARKINGS

Decals are necessary for safe operation and maintenance. To reorder, contact your Genesis dealer or call 715-395-5252.

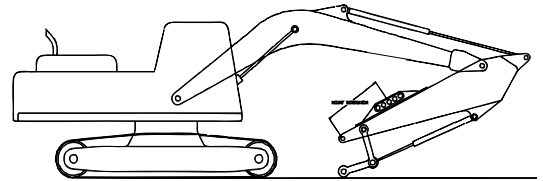


PAD INSTALLATION

Preparation of the excavator prior to attachment delivery will make installation safer and easier. Contact Genesis or your Genesis dealer for assistance.

Curl the excavator stick under so the bottom of the stick is facing upward.

Use the mounting dimensions provided on your installation drawing to locate the correct placement of the stabilizer pad on the bottom of the stick. The stabilizer pad must be centered on and parallel to the stick.



Weld the pad to the stick using E7018 low hydrogen electrode or equivalent. Weld per instructions provided on your installation drawing.

Install the stabilizer arm to the pad.



WARNING

Removing any connecting pin may be hazardous. To remove a connecting pin, position the attachment on the ground and properly support.



WARNING

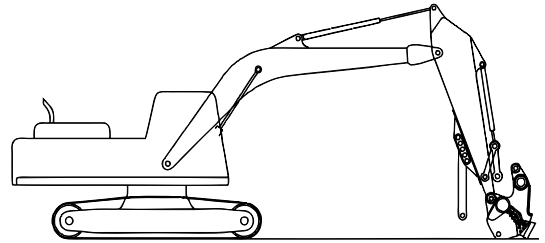
Particles may fly when a pin is struck. Use a drift pin or mallet when striking pins. Keep all personnel at a safe distance.

ATTACHMENT INSTALLATION

Remove the bucket or other attachment following the manufacturer's procedure. Retract the bucket cylinder and associated linkage. All Power Series Linkage Tools are designed to sit flat on the ground. The attachment must be on a firm, level surface with the jaws closed.

Position the excavator behind the attachment and carefully line up the stick connection of the excavator and attachment. Install pin.

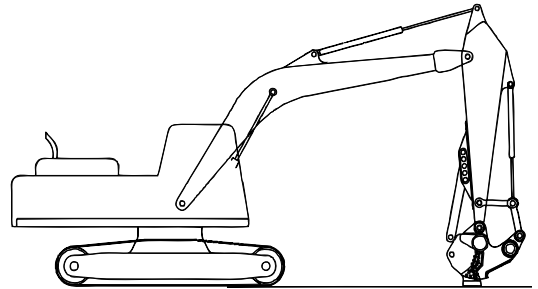
Raise the tool slightly off the ground and extend the bucket cylinder.



WARNING

Make sure all personnel stand clear. Lifting the attachment will cause the jaw to close and the stabilizer bar to swing.

Connect excavator power link to upper jaw.



Align the stabilizer arm with the stationary jaw by moving the stick and operating the bucket cylinder. Pin the arm to the jaw.

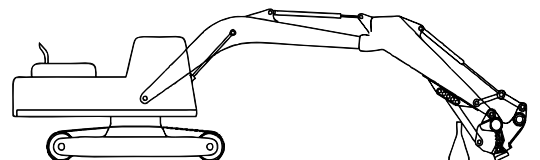
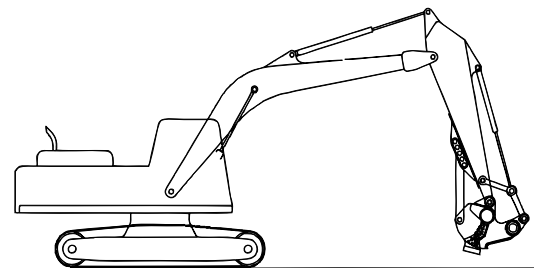
Check all connections to ensure mounting pins are properly retained.

Removal

To remove tool with stiff arm, set arm on heavy object. Remove pin from pad. Move tool to storage position with arm hanging.

Lower tool to ground. Close jaws to prevent tool movement after link pin is removed.

Remove pins.



MAINTENANCE SAFETY

Only trained and authorized persons should perform maintenance on the attachment. To be qualified, you must understand the instructions in this manual, have training, and know the safety rules and regulations of the job site.

Do not alter the physical or mechanical operation of the attachment. Doing so may cause a dangerous situation for yourself and those around you and will void the warranty.

Do not attempt repairs you do not understand. If any questions arise regarding a safety or maintenance procedure, contact Genesis or your Genesis dealer.

Read this entire manual. All personnel must understand the maintenance and safety procedures.

Use factory authorized parts. The use of unauthorized parts may compromise safety, performance and durability of the attachment and may void the warranty.

Follow the daily checklist and maintenance schedules in this manual. Extreme conditions may dictate shorter maintenance intervals.

Do not exceed bolt torque specifications. See the Genesis Fastener Manual.

Do not weld on structural components without consulting Genesis. Doing so may cause structural failure and void the warranty.

Do not work on the attachment before ensuring it will not move. Completely lower the boom to the ground or a rest position and relieve hydraulic pressure.

Never operate poorly maintained equipment. When maintenance is required, repair or replace parts immediately.

Do not operate under unsafe conditions. If an unsafe condition arises during operation, immediately shut down the equipment and report the situation to the proper authority.

MAINTENANCE SCHEDULE

Performing scheduled maintenance will ensure safe, reliable operation of your linkage attachment. Inspect and grease components every eight hours of operation, as indicated below. Use the maintenance procedures described in this manual. If you are not able to safely and competently perform these procedures, have a Genesis dealer perform them.

Extreme operating conditions may require shortened maintenance intervals.

Eight-Hour Checklist

Inspect:

- Bolts - replace loose or damaged
- Bracket pivot for wear and pin retainers
- Entire attachment for cracks (visual check)
- Jaw stop for cracking or damaged welds (GLS, GRS, GCC)

Grease:

- Bracket pivot
- Main shaft/pivot (both sides)
- Stick tip and linkage joints per excavator OEM instructions

Jaws:

- Check blade tolerance*
- Check blade edge radius*
- Check for loose or damaged bolts
- Check teeth or tines for wear
- Build-up and hard-surface as required

*See model-specific maintenance information in this manual for maximum tolerance and radius.

Grease

For normal conditions above 32°F (0°C), use a lithium-based, premium grade 2 extreme-pressure grease. For temperatures below 32°F, use a grade 0 grease.

Do not use grease containing Molybdenum (Moly).

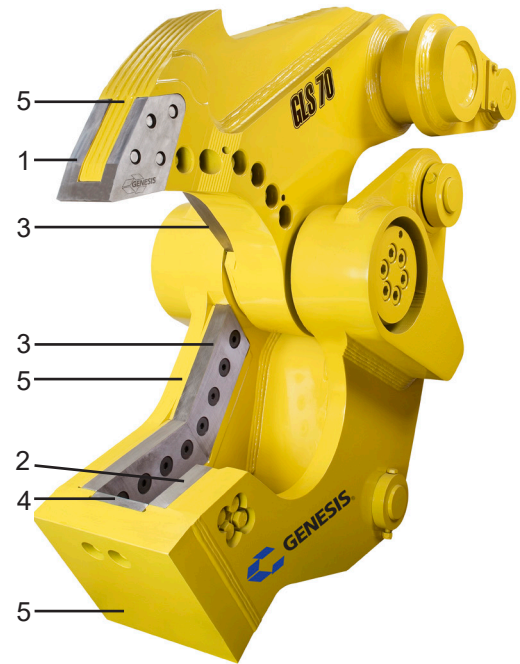
Genesis GLG-2[®] anti-wear, extreme-pressure lithium grease, PN 6302601, is recommended for all temperature conditions.

Grease all fittings every eight hours of operation. Grease until extrusion is visible.

LINKAGE SHEAR MAINTENANCE

Blade and jaw maintenance greatly affects performance. To maximize cutting performance and optimize replaceable part life, follow this specific sequence of checks, adjustments and maintenance.

1. Piercing Blades - replace when edges are worn.
2. Guide Blade - rotate, shim to tolerance and replace when worn.
3. Upper and Lower Cutting Blades - rotate; replace when all edges are worn. Shim lower blades to tolerance.
4. Razor Blade - rotate and replace when all edges are worn.
5. Welding Maintenance - perform jaw build-up and hard-surface as needed.



Blade Bolts

Torque blade bolts every eight hours to the specifications listed in the Genesis Fastener Manual torque chart. Check for broken bolts daily and replace them immediately.

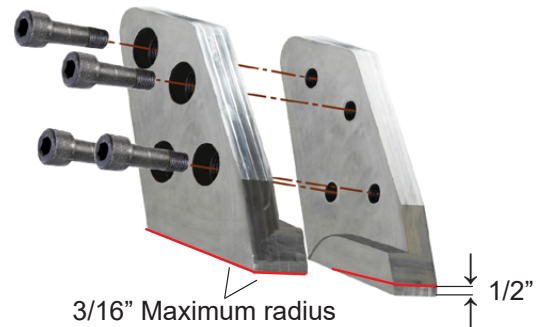
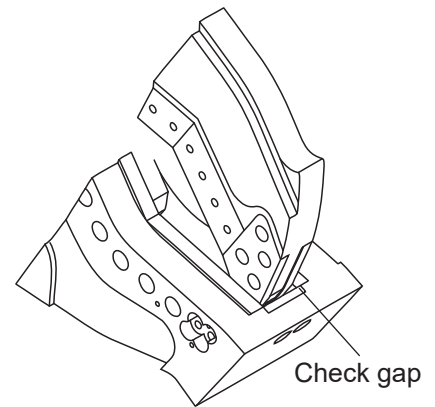
LINKAGE SHEAR MAINTENANCE

Piercing Blades

Piercing blade maintenance is crucial to productivity and safe operation. An improper blade gap may cause material jamming and/or blade breakage.

Use the following procedure to check for wear.

- Slowly close jaws until the piercing blades are flush with the top edge of the razor blade.
- Check gap with a tape measure. Acceptable gap is 5/8".
- Check the condition of the piercing blades with a straight edge or square.
- Check the profile along the blades.
- Badly worn blades must be replaced. However, slightly worn blades may be squared up with a grinder and a square. This may be repeated until a maximum of 1/2" of material is removed from the lower piercing edge.
- Typical use requires blade replacement at approximately 200 hours; heavy piercing requires replacement at approximately 40 hours. These are general guidelines only. Replace blades based on wear, not based on hours of operation.
- Width of blades, top to bottom, may taper 0.060" (2mm) total. Bottom edges may be worn to a maximum radius of 3/16".



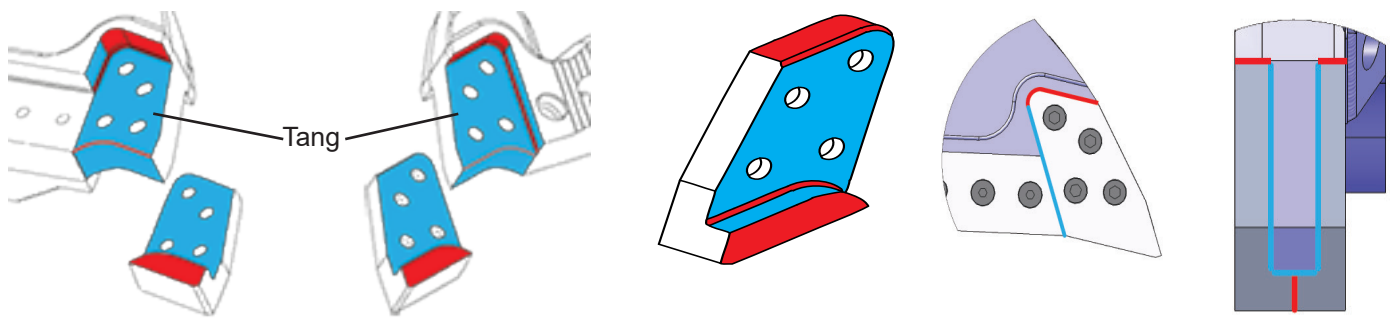
LINKAGE SHEAR MAINTENANCE

Piercing blades must fit tightly in some areas while having clearance in others. Piercing blades are made from the same material as the cutting blades to withstand the friction caused by piercing hard materials.

Areas **Highlighted in Blue** require contact fit to the upper jaw and tang to prevent shattering.

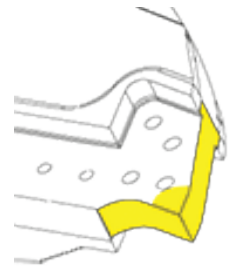
Areas **Highlighted in Red** require an air gap, and blades may occasionally need to be ground down to provide clearance.

Piercing blade contact with the clearance areas (**red**) can cause abnormal stress in the blade. This may cause the piercing and/or guide blades to crack, break or shatter.



When necessary, build up the front lower edge of the tang and the front vertical surface of the upper (areas **highlighted in yellow**), following the procedures given in this manual. After welding, surfaces should be squared with a grinder and finished with a file and a machinist's straight edge.

It is critical that the piercing blade pocket and tang surfaces are straight and true, without dings, deformations, high or low spots, or areas that are worn away.



Piercing blade bolts must not make hard contact with the bolt holes in the upper tang. In rare cases it has been noted that improper alignment of piercing blade bolt holes and the bolt holes in the tang can cause the piercing blades to break through the bolt holes.

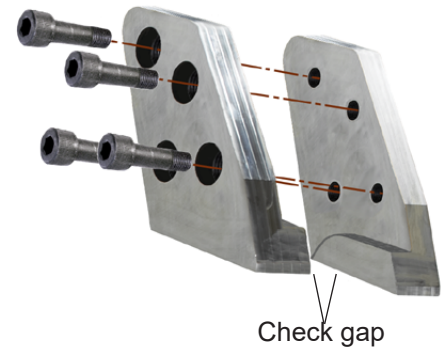
When installing the piercing blades, the bolts must be freely installed by hand, not with an air impact wrench.

The bolts may start freely, but when the bolt shank, which is larger in diameter than the threads, enters the hole in the tang, the interference can cause side loading to the piercing blades. This can cause the tips to break as they try to force the holes apart, or it may force the tips to seat improperly on the tang which can also cause tip failure. This is not a common issue, but one that should be noted as part of routine tip maintenance to prevent unnecessary costs and downtime. If this situation is encountered, contact the Genesis Parts or Service Departments for further instructions.

LINKAGE SHEAR MAINTENANCE

Piercing Blade Replacement

1. Remove blades using an air-impact wrench or breaker bar and multiplier.
2. Remove dust and debris from blade seats; wipe down with a rag and solvent.
3. Lightly file deformities from blade seat edges. Do not sand or grind face of blade seats.
4. Install new, clean blades. Lubricate the threaded holes in the blade and on the bottom of the bolt head where it will contact the blade.
5. Snug lubricated blade bolts by hand to hold them in place; push blades up and into the upper and rear surfaces of the seats.
6. Torque bolts to 1/3 of the final torque value.
7. Check for firm contact against blade seats.
8. With a feeler gauge, confirm gap of 0.002" to 0.010" where blades meet at piercing surface. A very narrow gap may be confirmed by shining a flashlight from below the blades and seeing light pass through. If gap exceeds 0.010", call the Genesis Service Department. If no gap exists, remove blades, lightly grind facing surfaces and repeat steps 5-8.
9. Torque bolts to 2/3 final value, and then to final value, using a cross bolt pattern.



NOTICE

Piercing blade bolts must be lubricated and torqued as specified in the Genesis Fastener Manual.

Correct clamping force is required to keep tips from moving on their seats. Over-tightening can cause bolt shanks to stretch, losing their clamping force. Loose bolts will cause the seating areas to erode.

LINKAGE SHEAR MAINTENANCE

Guide Blade

Check guide blade tolerance every eight hours. When necessary, shim the guide blade to keep the gap within the specifications listed in the blade gap table.

Rotate the guide blade when worn to a 1/8" (3 mm) radius. Replace the guide blade when more than 0.075" (2 mm) of shims are required to keep the blade gap within the tolerances listed in the following table.

Guide Blade to Piercing Blade Gap		
Model	Minimum	Maximum
GLS 50	0.005"	0.020"
GLS 70	0.005"	0.020"
GLS 90	0.010"	0.025"

Guide Blade Shimming

Slowly close the jaws so the upper piercing tip begins to bypass the guide blade. Stop the jaw and check the gap between the guide blade and piercing tip. Cycle the jaws slowly, stopping at several points along the piercing tip to check the gap each time.

Shim the guide blade as needed to keep the gap within the tolerances listed in the blade gap table.

To install shims, loosen the blade bolts and slide shims between the guide blade and guide blade seat. Retorque bolts and recheck the gap.

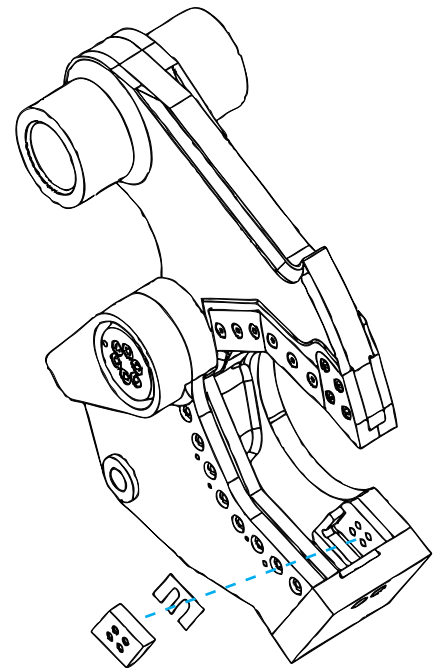
Guide Blade Rotation

Remove the bolts, guide blade and shims. Rotate the blade end-for-end or side-to-side; reinstall and torque bolts. Check gap; shim if required.

If the guide blade faces are excessively worn, the blades cannot be rotated. Excessively worn blades will have uneven surfaces that, when placed upon guide blade seat surfaces, will not be supported and will break, resulting in blade seat damage.

Guide Blade Replacement

Remove guide blade and shims. Install new guide blade with no shims. Check blade gap and shim as needed.



LINKAGE SHEAR MAINTENANCE

Primary and Secondary Blades

Proper maintenance of the primary and secondary blades, or cutting blades, is required for optimal performance. Blade rotation extends blade life and improves cutting performance. Shimming to maintain blade tolerances helps prevent jamming. Dull blades make the excavator hydraulic system work harder and may cause structural damage to the attachment.

Inspect blades every eight hours of operation. Re-torque loose bolts and replace broken bolts. Grind away dents or mushrooming of blade edges at the end of each day to prevent upper jaw deflection, excessive blade wear and undue stress to upper and lower jaws.

Rotate blades to use all four cutting edges. Always use Genesis-approved blades. Blades that do not meet Genesis specifications can cause major problems, and using them may void the warranty.

Before performing any blade maintenance, read, fully understand and follow these safety rules.

- Wear personal safety equipment including gloves, safety glasses, safety boots and proper clothing.
- Safe blade maintenance requires two people - one to steady the blade while the other loosens the bolts.
- Blades are heavy and may fall out of the blade seat if not adequately supported. Bystanders must stand clear.
- Never strike a blade with a hardened steel tool. The blade may fragment, creating sharp flying debris.

Primary and Secondary Blade Removal

Loosen the bolts on one blade at a time, enough to loosen the blades.

If blades remain tight, insert a 7/16" brass drift pin into the through-hole on the lower jaw. Tap the drift pin with a hammer until the blade is loose.

Carefully remove bolts and blades.



LINKAGE SHEAR MAINTENANCE

Adjustment Plates

Do not remove the adjustment plates from the lower jaw during routine blade rotation or replacement. These plates are custom-machined for each attachment and need only be replaced when lost, damaged or extremely worn.

Inspect the top of each adjustment plate and seat for burrs, nicks or other imperfections that may prevent proper seating of the blades and cause errant blade gap readings. Clean the adjustment plates as necessary.

Replacement plates can be ordered from your Genesis dealer or the Genesis Parts Department with the serial number of your attachment.

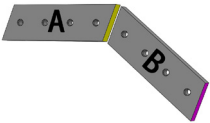
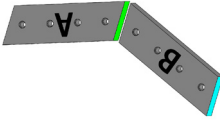
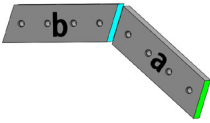
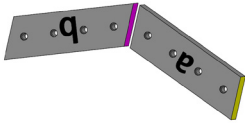
Offset dowel or fastener holes are located in each adjustment plate. When replacing adjustment plates, make sure these holes are aligned with the corresponding holes in the blade seat.

Do not grind blade seat areas.

Primary and Secondary Blade Rotation

Rotate blades when the cutting edges are worn to a 1/8" (3 mm) radius.

Recommended rotation intervals are approximately 40-80 hours, depending on the material being processed. Thin materials may require shorter rotation intervals. Blades must be replaced when all four edges are worn to 1/8" (3 mm) radius.

Original Blade Configuration	First Rotation Rotate both blades end-for-end	Second Rotation Rotate both blades front-to-back and exchange seat positions	Third Rotation Rotate both blades end-for-end
			

The following chart may be copied and used to track blade rotation.

40 - 80 Hours	Date	Hour Meter	Performed By
Installed			
Rotation 1			
Rotation 2			
Rotation 3			

LINKAGE SHEAR MAINTENANCE

Primary and Secondary Blade Gap

After each blade rotation, shim the lower blades to keep the gap within the specifications listed in the table below. Do not shim the upper blades. Use only Genesis shim kits.

Model	Minimum	Maximum
GLS 50	0.005"	0.015"
GLS 70	0.005"	0.015"
GLS 90	0.010"	0.020"

Blade Gap Measuring Procedure

Slowly close jaws until blades begin to bypass. Stop the jaw and check the gap with a feeler gauge.

Cycle the jaws slowly and continue checking the gap at several points along the entire length of the blades.

Note: The gap will be consistent along the entire length of the blades if they have been rotated and shimmed correctly.

If the blade gap exceeds the maximum listed on the table above, shim the lower blades. Blades must be replaced when shims exceed 0.060".

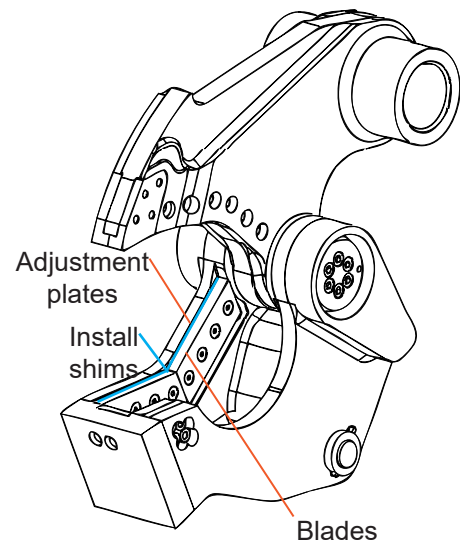
Blade Shimming

Loosen blade bolts.

Install shims between the blades and adjustment plates as needed to bring into tolerance.

Torque bolts to spec and recheck the tolerances.

Do not use more than 0.060" of shims.



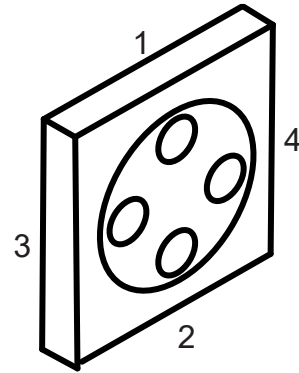
LINKAGE SHEAR MAINTENANCE

Razor Blade

Check the razor blade for wear every eight hours of operation. Rotate when worn, using the edges in the sequence indicated by the illustration.

After rotation, check the gap between the razor blade and piercing blades. If the gap exceeds the maximum tolerance after new piercing blades have been installed, the razor blade must be replaced. Do not shim the razor blade.

Set screws should be installed in unused bolt holes to prevent thread and hole damage. Replace set screws when lost or damaged.



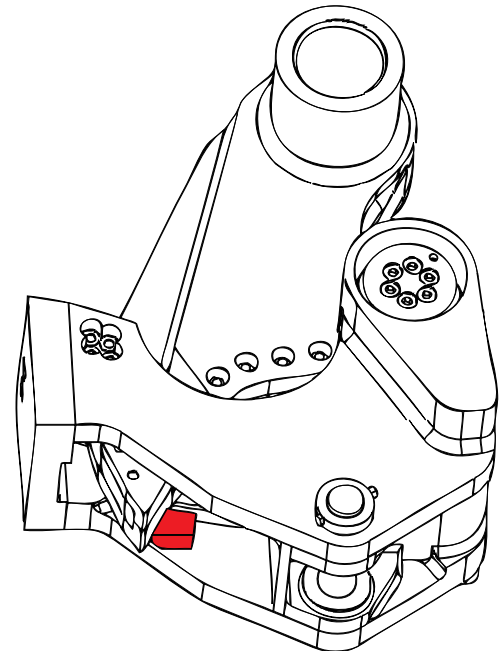
Jaw Stop

The Linkage Shear features a jaw stop welded in the lower jaw.

The jaw stop is positioned well beyond blade bypass and designed to prevent the excavator bucket linkage from toggling over. Toggling over can jam the linkage and bend the bucket cylinder rod.

To extend the life of the jaw stop and reduce maintenance, avoid extending the bucket cylinder beyond the point where material is cut.

Inspect the jaw stop every eight hours of operation, checking for cracked or damaged welds.



CAUTION

To prevent serious excavator damage, replace the stop immediately if cracked or damaged welds are found.

REBAR SHEAR MAINTENANCE

Blade and jaw maintenance greatly affects performance. To maximize cutting performance and optimize replacement part life, follow this specific sequence of checks, adjustments and maintenance.

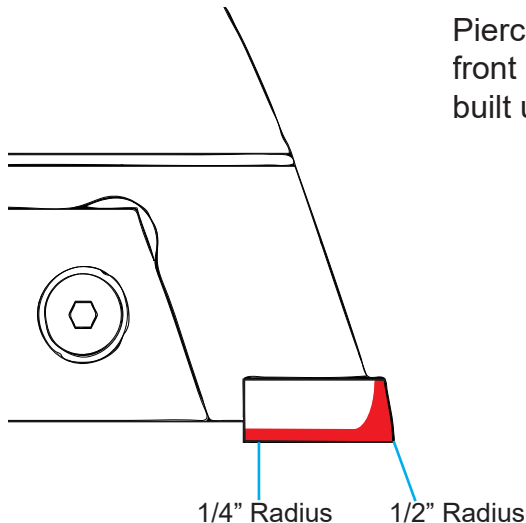
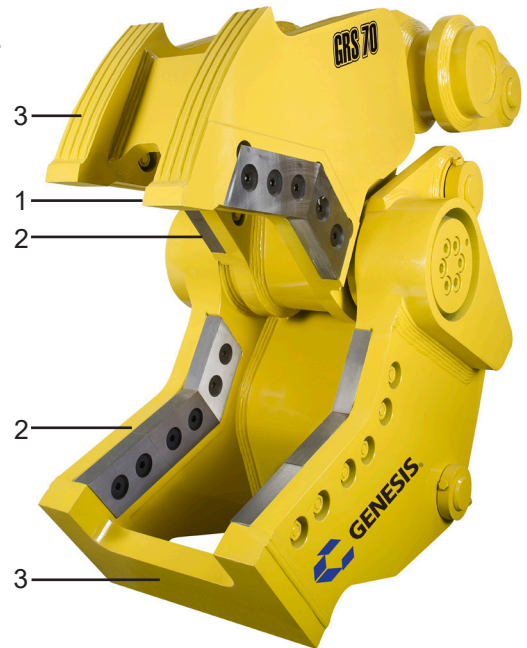
1. Piercing Tips - replace or build up when edges are worn.
2. Upper and Lower Blades - rotate; replace when all edges are worn. Shim lower blades to tolerance.
3. Welding Maintenance - perform jaw build-up and hard-surface as needed.

Blade Bolts

Torque blade bolts every eight hours, to the specifications listed in the torque chart in this manual. Check for broken bolts daily and replace them immediately.

Piercing Tips

Piercing tips are highly susceptible to wear from cutting and digging in rebar piles. Excessive wear will cause material jamming and parent material erosion.



Piercing tips should be replaced when 1/2" radius is worn from the front edge of the tip and 1/4" is worn from the sides. Tips may be built up and ground flush with blades to extend tip life.

REBAR SHEAR MAINTENANCE

Primary and Secondary Blades

Proper maintenance of the primary and secondary blades, or cutting blades, is required for optimal performance. Blade rotation extends blade life and improves cutting performance. Shimming to maintain blade tolerances helps prevent jamming. Dull blades make the excavator hydraulic system work harder and may cause structural damage to the attachment.

Inspect blades every eight hours of operation. Re-torque loose bolts and replace broken bolts. Grind away dents or mushrooming of blade edges at the end of each day to prevent upper jaw deflection, excessive blade wear and undue stress to upper and lower jaws.

Rotate blades to use all four cutting edges. Always use Genesis-approved blades. Blades that do not meet Genesis specifications can cause major problems, and using them may void the warranty.

Before performing any blade maintenance, read, fully understand and follow these safety rules.

- Wear personal safety equipment including gloves, safety glasses, safety boots and proper clothing.
- Safe blade maintenance requires two people - one to steady the blade while the other loosens the bolts.
- Blades are heavy and may fall out of the blade seat if not adequately supported. Bystanders must stand clear.
- Never strike a blade with a hardened steel tool. The blade may fragment, creating sharp flying debris.

Primary and Secondary Blade Removal

Loosen the bolts on one blade at a time, enough to loosen the blades.

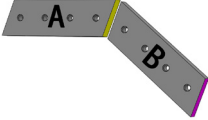
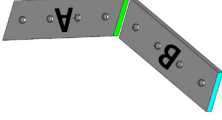
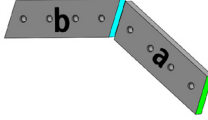
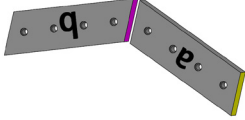
Carefully remove bolts and blades.

REBAR SHEAR MAINTENANCE

Primary and Secondary Blade Rotation

Rotate blades when the cutting edges are worn to a 1/8" (3 mm) radius.

Recommended rotation intervals are approximately 40-80 hours, depending on the material being processed. Thin materials may require shorter rotation intervals. Blades must be replaced when all four edges are worn to 1/8" (3 mm) radius.

Original Blade Configuration	First Rotation Rotate both blades end-for-end	Second Rotation Rotate both blades front-to-back and exchange seat positions	Third Rotation Rotate both blades end-for-end
			

The following chart may be copied and used to track blade rotation.

40 - 80 Hours	Date	Hour Meter	Performed By
Installed			
Rotation 1			
Rotation 2			
Rotation 3			

Primary and Secondary Blade Gap

After each blade rotation, shim lower blades to keep the gap within the range of 0.031" to 0.062". Do not shim the upper blades. Use only Genesis shim kits.

Blade Gap Measuring Procedure

Slowly close jaws until blades begin to bypass. Stop the jaw and check the gap with a feeler gauge.

Cycle the jaws slowly and continue checking the gap at several points along the entire length of the blades.

Note: The gap will be consistent along the entire length of the blades if they have been rotated and shimmed correctly.

If the blade gap exceeds 0.062", shim the lower blades. Blades must be replaced when shims exceed 0.060".

REBAR SHEAR MAINTENANCE

Blade Shimming

Loosen blade bolts.

Install shims between blades and adjustment plates as needed to bring into tolerance.

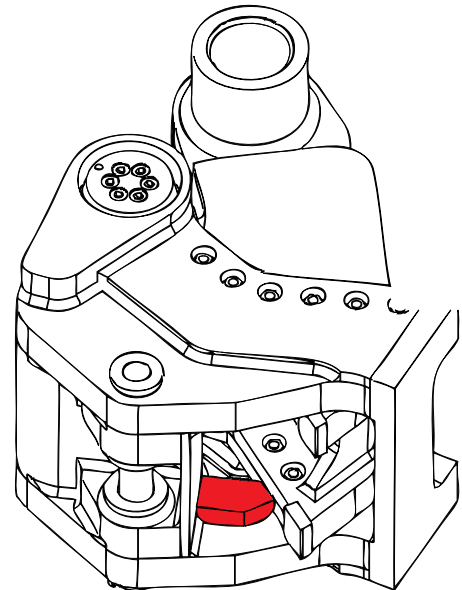
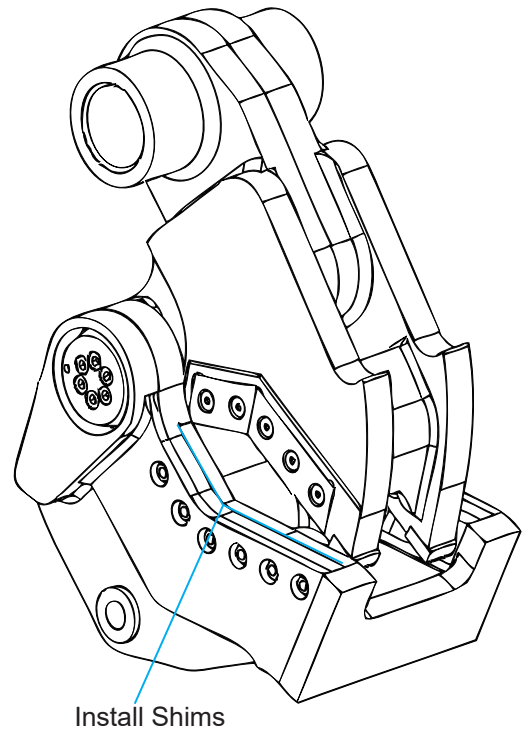
Torque bolts to spec and recheck tolerances.

Do not use more than 0.060" of shims.

Jaw Stop

The Rebar Shear features a jaw stop welded in the lower jaw. The jaw stop is positioned well beyond blade bypass and designed to prevent the excavator bucket linkage from toggling over. Toggling over can jam the linkage and bend the bucket cylinder rod.

To extend the life of the jaw stop and reduce maintenance, avoid extending the bucket cylinder beyond the point where material is cut. Inspect the jaw stop every eight hours of operation, checking for cracking or damaged welds.



CAUTION

To prevent serious excavator damage, replace the stop immediately if cracked or damaged welds are found.

CONCRETE CRACKER MAINTENANCE

Blade and jaw maintenance greatly affects performance. To maximize performance and optimize replaceable part life, follow all instructions for checks, adjustments and maintenance described in this section, at the intervals listed in the maintenance schedule in this manual.

Before performing maintenance, read, fully understand and follow these safety rules.

- Wear personal safety equipment including gloves, safety glasses, safety boots and proper clothing.
- Safe blade maintenance requires two people - one to steady the blade while the other loosens the bolts.
- Blades are heavy and may fall out of the blade seat if not adequately supported. Bystanders must stand clear.
- Never strike a blade with a hardened steel tool. The blade may fragment, creating sharp flying debris.

Concrete Cracking Blades

Proper maintenance of the blades is required for optimal performance. Blade rotation extends blade life and improves performance.

At the end of each eight-hour shift, inspect blades and check the condition of concrete cracking points on the blades. Replace any broken bolts, and retorque loose bolts when cool. Grind away dents or mushrooming of blade edges at the end of each day to prevent upper jaw deflection, excessive blade wear and undue stress to jaws.

Rotate blades to use both cutting edges. Always use Genesis-approved blades. Blades that do not meet Genesis specifications can cause major problems, and using them may void the warranty.

Replace blades when cracking points become severely rounded or flat. A more pointed blade will process concrete more efficiently. Cracking points may be build up and re-used if desired to extend blade life.

Blade Removal

Loosen the bolts on one blade at a time, enough to loosen the blades.

Carefully remove bolts and blades.

CONCRETE CRACKER MAINTENANCE

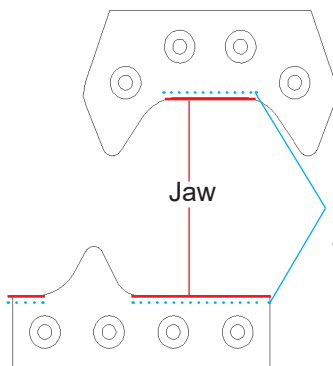
Blade Rotation

Rotate blades when the cutting edges are worn to a 1/8" (3mm) radius. Blades may be squared up with a grinder to extend blade life.

Rotate upper blades and swap from one pocket to the other. The worn cutting edge of the blade is still on the outside, but concrete points switch from back to front and vice versa.

Move lower blades from one pocket to the other without rotating blades, using the new edge of the blade.

Recommended rotation intervals are approximately 40-80 hours, depending on the severity of the application. Blades must not be ground lower than 1/8" (3mm) below the jaw. Blades that are worn to this degree on both edges must be replaced.



Do not grind blades more than 1/8" below the jaw.



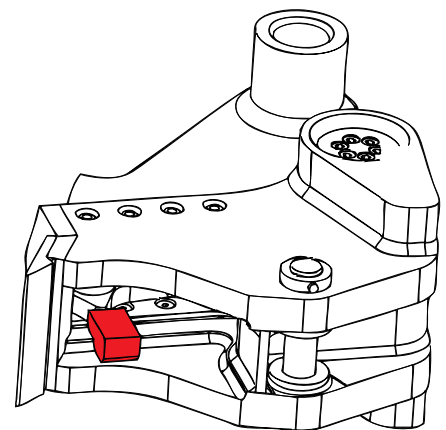
Jaw Stop

The Concrete Cracker features a jaw stop welded in the lower jaw.

The jaw stop is positioned well beyond blade bypass and designed to prevent the excavator bucket linkage from toggling over. Toggling over can jam the linkage and bend the bucket cylinder rod.

To extend the life of the jaw stop and reduce maintenance, avoid extending the bucket cylinder beyond the point where material is cut.

Inspect the jaw stop every eight hours of operation, checking for cracking or damaged welds.



CAUTION

To prevent serious excavator damage, replace the stop immediately if cracked or damaged welds are found.

MECHANICAL PULVERIZER MAINTENANCE

Tooth and jaw maintenance greatly affects performance. To maximize performance and optimize replaceable part life, follow all instructions for checks, adjustments and maintenance described in this section, at the intervals listed in the maintenance schedule in this manual.

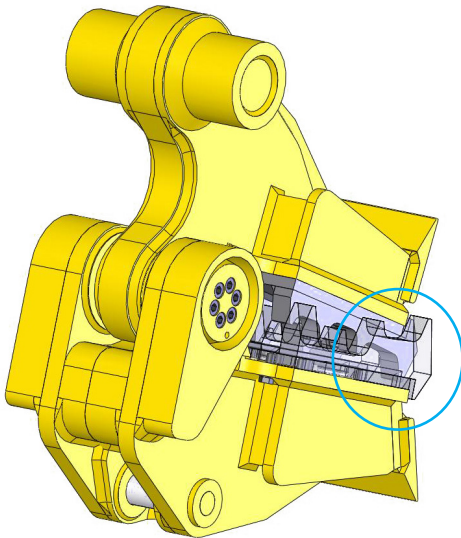
Before performing maintenance, read, fully understand and follow these safety rules.

- Wear personal safety equipment including gloves, safety glasses, safety boots and proper clothing.
- Safe removal of pulverizing teeth requires two people - one to steady the tooth bed while the other loosens the bolts.
- Tooth beds are heavy and may fall from the jaw if not adequately supported while bolts are being loosened. Bystanders must stand clear.

Pulverizing Teeth

At the end of each shift, check the condition of pulverizing teeth. Replace any broken bolts, and retorque loose bolts when cool.

Replace tooth bed when tips becomes severely rounded or flat. Dull teeth will process concrete less efficiently.



Teeth may be built up and hard-surfaced to extend the life of the tooth bed. This should be done with the teeth bolted into the jaws to prevent warping the machine surface of the tooth bed.

The bypass of the outside rows of teeth is tight enough to cut rebar (front teeth). Maintaining square edges in these areas (both upper and lower) will allow continued cutting.

GENERAL WELDING GUIDELINES

Build-up and hard-surfacing are welding procedures that protect the parent material of the jaws and keep the blades in good adjustment. Build-up is the welding procedure that restores the jaws to their original shape. Building up the jaws helps protect the blades and increases attachment life. Hard-surfacing is the welding material added over the parent material (or build-up material) to create a wear-resistant surface.

Welding should not be performed until the jaws are work-hardened. Work-hardening can take up to 80 hours. On attachments with blades, jaws must not wear lower than the height of a new blade. If either jaw wears down lower than blade height, immediately stop operating the attachment and perform build-up and hard-surfacing as described in the following pages of this manual.

When welding around blade seats or the piercing tip tang area (GLS only), maintain the factory machined seat radius. If the rounded grooves are welded up, use a die grinder with a carbide tool to recut these areas to their original profile. Leaving a squared edge will eventually cause structural cracking. The radius provides a broader area to absorb structural stress.

Welding Ground Clamp

Disconnect all battery ground cables or shut off master battery switch, if equipped. Failure to do so may cause excavator electrical problems, including permanent damage to on-board computer systems.

Connect ground clamp as close as possible to the area being welded without allowing current to pass through the pivot group or cylinder pin.

If you are welding on the lower jaw, connect weld clamp to the lower. If you are welding on the upper jaw, connect to the upper but not to the power link. If needed, weld a piece of steel to the area for the grounding clamp and cut the piece off when welding is completed.

Welding Rules

Before you begin:

- Remove adjacent blades, as preheating and welding may cause blade damage.
- Wearing an approved respirator, grind the area to clean it, removing all existing hard-surfacing.
- Preheat area to 350° F (177° C). Maintain this temperature throughout the procedure. Do not exceed 450° F (232° C) interpass temperature.

During welding:

- Always grind and weld with the grain of the material.
- Peen each weld pass to relieve stress and harden the welds.
- Do not undercut the ends of the welds.
- Do not start or stop welds directly above a bolt hole or in the apex of the jaw.

After welding maintenance is complete:

- Cover the area with a heat blanket and allow it to cool slowly, approximately eight hours.
- Do not put the attachment into operation until the welds have been allowed to cool.

BUILD-UP

Procedure:

Follow the General Welding Guidelines and Rules.

Determine the area to build up, using a straight-edge or square. On tools with blades, jaws must not wear lower than the height of a new blade. Use a new blade to help determine build-up height for the jaw.

Build up the jaw to slightly higher than the original parent material profile with E7018. Apply single passes in each line with the grain of the steel, peening after each pass.

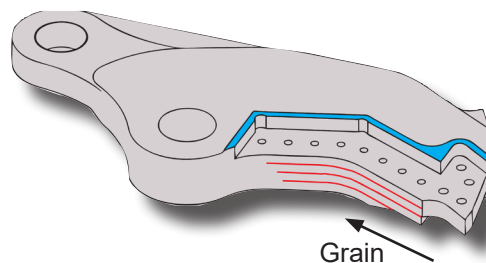
Protection strips, or raised areas under or around blade seats, must be built up and maintained during build-up procedure using E7018 or equivalent.

These areas should be maintained between blade height and 0.010" lower than blade height. These areas protect the bottom unused edges of the blades as well as reduce the chance for material to catch on the bottom of the blade during jaw open functions, which causes blades to move in their seats.

Denting, deformation or build-up higher than blades in these areas may cause upper jaw deflection, excessive blade gaps, wear to blade faces and undue stress to upper and lower jaws.

After build-up is complete, grind material to be flush with a new blade.

Note: Closely monitor areas above guide blade bolt countersinks and below front two upper blade bolt countersinks. These are high-wear areas. If allowed to wear too far, parent material starts to fold into the countersinks, and it becomes time-consuming to clean out this area when access is needed for blade rotation and replacement.



Area highlighted in blue illustrates protection strip.

HARD-SURFACING

Do not apply hard-surfacing directly to the parent material as this could cause toe cracking, and the hard-surfacing will break away.

Procedure:

Follow the General Welding Guidelines and Rules.

Apply a single pass stringer bead pattern, with the grain, using E7018 electrode. Peen each pass.

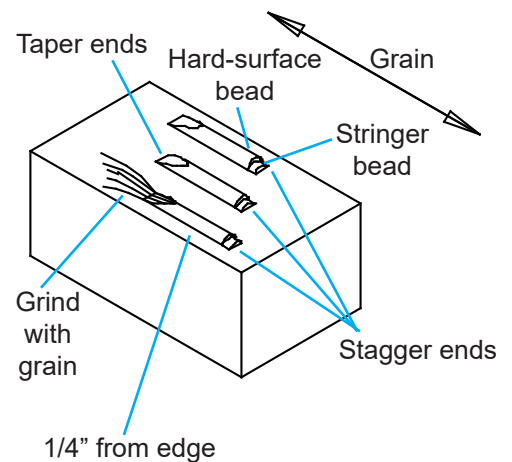
Do not apply a stringer directly on the edge. Start the first pass 1/4" from the edge.

Stagger the ends of the stringer welds so they do not end in a straight line.

Cap each stringer bead with one pass of GenWire or GenRod to hard-surface. Do not apply more than two layers of hard-surfacing. Peen each pass.

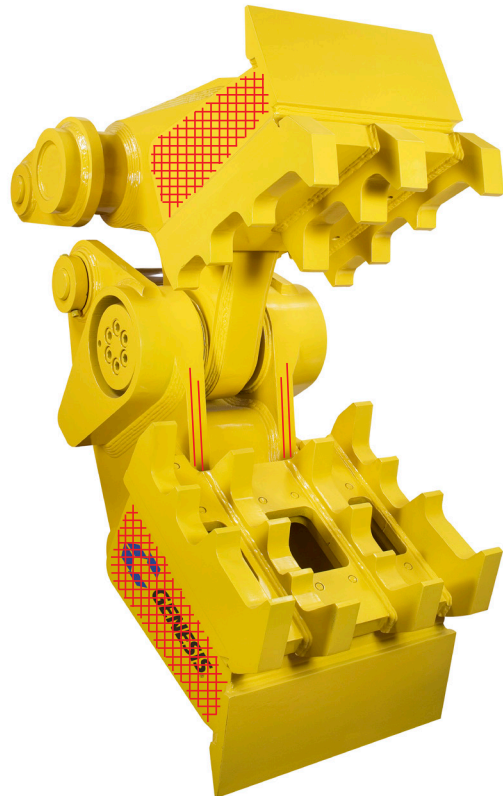
Grind the ends of all stringer welds, with the grain to taper 1" to 1-1/2" (25 - 38 mm) to the parent material.

See the following page for hard-surfacing illustrations and instructions specific to each area of the jaws.



HARD-SURFACING PATTERNS

Where parallel lines are shown, apply single passes approximately 1" apart. Where crosshatch is shown, apply stringer beads at 45° angles to form 1" squares.



TROUBLE-SHOOTING GUIDE

Symptom	Possible Cause	Possible Solution
Lacks power	Cutting force depends on excavator linkage; different geometry produces different results	Move the stiff arm forward one hole (closer to the tool), decreasing jaw opening but yielding more power *See warning below
Poor cutting/crushing	Material size is beyond processor appetite range	Consult the factory
	Worn blades	See the jaw and blade maintenance sections of this manual
	Excess blade gap	
	Worn pulverizing teeth	Replace component or build up and hard-surface
Poor piercing	Excess wear to piercing tips or razor blade	See the jaw and blade maintenance sections of this manual
Material jamming	Excess blade gap	See the jaw and blade maintenance sections of this manual
	Insufficient blade gap between piercing tips and guides	
	Worn blades	
	Worn piercing tips	



CAUTION

*Moving the stiff arm back one hole (further from the tool) from the factory-recommended position may result in linkage toggle and bucket cylinder damage.

WARRANTY

Claim Procedure

Notify the Genesis Service Department of the potential warranty claim prior to making the repair. Digital pictures are very helpful for diagnosing problems and recommending repairs.

Contact the Genesis Service Department before making alterations, changes or repairs to any component that is going to be considered for warranty. Not doing so will void all Genesis warranty consideration.

The Genesis Service Department will issue an authorization number to track the repair costs, outgoing parts, and/or defective parts returning to the factory.

Replacement parts must be ordered using a purchase order number. Shipping is standard ground. Overnight shipping is available by request, and Genesis will not cover the shipping charge.

When the repair is complete, submit an invoice to the Genesis Service Department within 30 days. Include itemized internal labor reporting, parts lists and invoices for outside contractors. Reference the authorization number on all invoices.

When returning parts for warranty consideration, include a copy of any related Genesis paperwork along with any other necessary documentation to ensure proper processing and credit. The Genesis Service Department will provide the necessary forms.

Your account will be credited when the warranty claim is accepted.

Blade Warranty

Standard warranty on blades will only be considered on the first edge, and wear on the edge must be 1/8" radius or less. Genesis does not warranty cutting blades that are cracked or broken from top to bottom (perpendicular to the long edge of the blade). Genesis also does not cover fasteners, the labor to replace wear components or collateral damage, such as blade seats, from broken blades, the piercing blade tang or adjustment plates.

Please direct any questions to the Genesis Service Department: 715-395-5252

PARTS ORDER POLICY AND PROCEDURE

Parts Orders Should Include

- Purchase order number
- Model and serial number of attachment
- Part number and quantity needed
- Shipping and billing address
- Method of shipment or required delivery date

Placing Orders

Orders may be placed by phone or e-mail. To e-mail an order, use the form on the following page or your purchase order form. Contact information is located at the front of this manual.

Part Numbers

Part numbers are listed in a separate Parts Manual or, if included, the Parts section of this manual. Contact the Genesis Parts Department with questions regarding part numbers, availability and pricing.

Shipping

All orders will be shipped best way surface unless an alternate shipping method is requested. Shipping charges are not included in the purchase price of parts.

Invoices

All invoices are due upon receipt. Any accounts with invoices open beyond 60 days are subject to review and may be placed on C.O.D. status without further notice.

Returns

Many unused Genesis parts may be returned with proper documentation. Return shipping is the responsibility of the purchaser. Credit will be issued upon return, less a 25% restocking fee. Documentation is required for credit of returned parts. Contact the Genesis Service Department at 715-395-5252 for an RGA (Return Goods Authorization) number and form. An RGA must accompany every return. Items shipped without an RGA may be returned to sender.

Warranty Returns

All parts returned to Genesis for warranty consideration must be returned with a completed RGA (Return Goods Authorization) provided by the Genesis Service Department. The form needs to be completed in its entirety, including any additional information requested by the Service Department. Return shipping is the responsibility of the sender and will be credited upon claim approval. A determination to accept or deny the claim will be made based upon the information available to Genesis. Warranty on purchased parts other than wear components is 6 months. Genesis does not cover labor costs to replace purchased parts replaced under warranty. There is no warranty period on wear parts or components.

PARTS

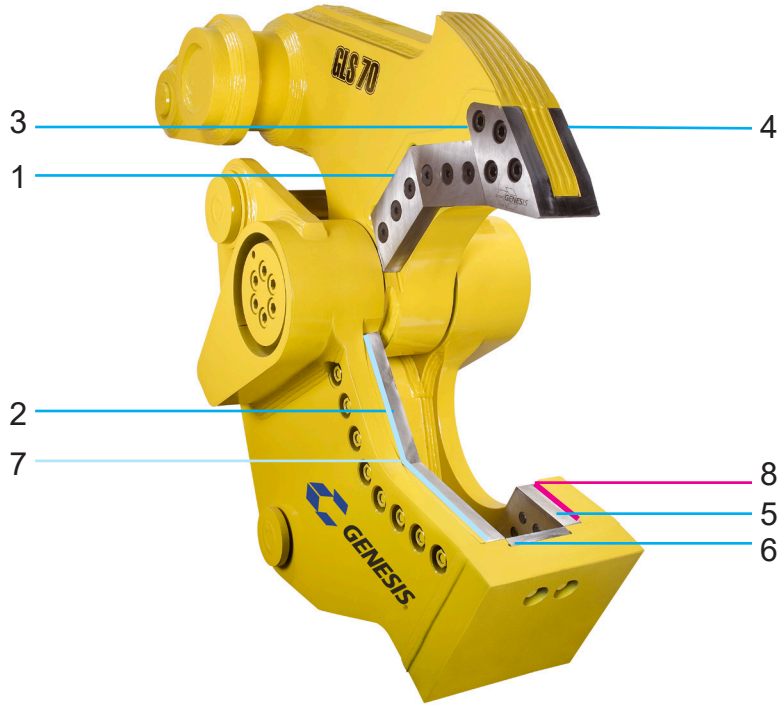
The following pages contain illustrations and part lists for Power Series Linkage Tools. These photos and generalized drawings identify major components and may not be identical in fine detail to a particular attachment.

The part lists included here are intended to aid in operation and maintenance. Part numbers listed are those currently used. These may differ from the part numbers of the components originally installed in your attachment. To ensure use of the correct internal components, always indicate your attachment model and serial number when ordering parts.

If further information is required, contact the Genesis Parts Department for a breakdown and parts list specific to your attachment model and serial number.

PARTS

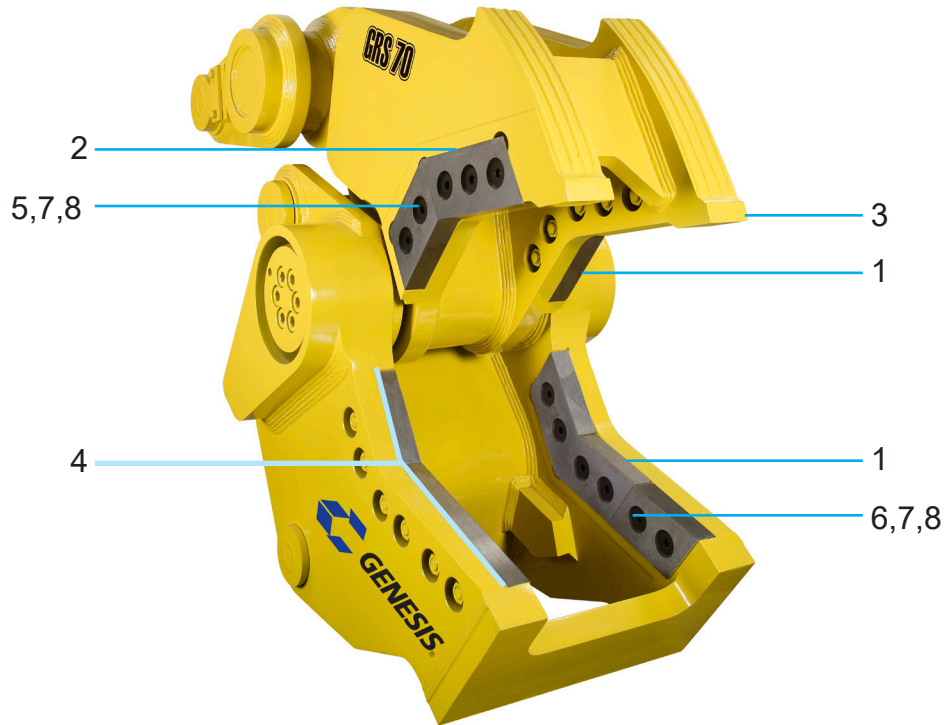
GLS Blades and Wear Parts



Item	Qty	Part Number			Description
		GLS 50	GLS 70	GLS 90	
1	2	4500397	1103534	1103536	Upper Blades
2	2	4500396	1103535	1103537	Lower Blades
3	1	4500394	1103538	1103538	RH Tip Blade
4	1	4500395	1103539	1103539	LH Tip Blade
5	1	4500398	1103540	1103540	Guide Blade
6	1	4500399	1101955	1101955	Razor Blade
7	2	4500464	1103661	1103659	Blade Shims
8	1	4500470	1103660	1103660	Guide Shims

PARTS

GRS Blades and Wear Parts



Item	Qty	Part Number		Description
		GRS 70	GRS 90	
1	8	4500705	4500709	Lower Blades & Upper Primary Blades
2	2	4501319	4501318	Upper Secondary Blades
3	2	4501330	4501330	Weld-on Piercing Tips
4	2 sets	4501006	4501607	Lower Blade Shims
5	10	F0510350	F0510350	Upper Blade Bolts, 1 - 8 x 3½
6	12	F0510350	F0510450	Lower Blade Bolts, 1 - 8 x 4½
7	22	F0910008	F0910008	Hex Nuts
8	22	F1300100	F1300100	Flat Washers

PARTS

GCC Blades and Wear Parts



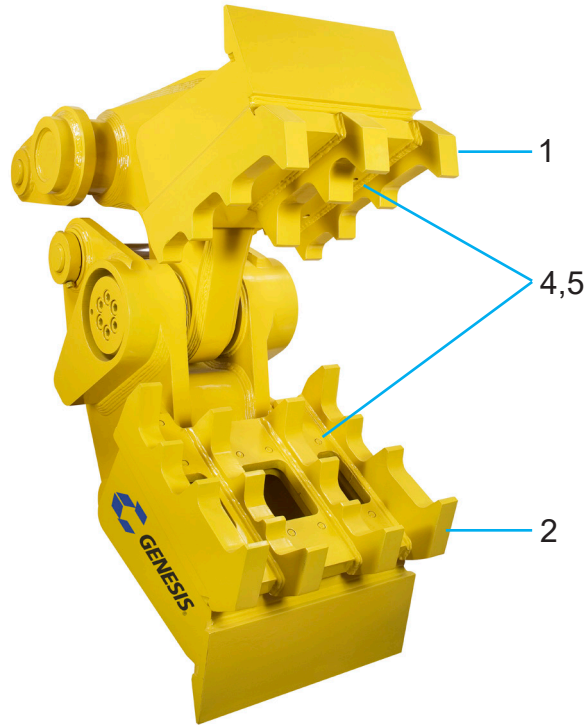
Item	Qty	Part Number			Description
		GCC 50	GCC 70	GCC 90	
1	1	4500063	4500119	4500276	Upper RH Blade
2	1	4500062	4500121	4500278	Upper LH Blade
3	2	4500061	4500117	4500274	Lower Blades
4	See Model	F0588550 (4)	F0510600 (4)	F0510600 (5)	Upper Blade Bolts**
5	See Model	F0588300 (8)	F0510350 (8)	F0510350 (10)	Lower Blade Bolts**
6	See Model	F0908809 (12)	F0910008 (12)	F0910008 (15)	Hex Nuts
7	See Model	F300088 (12)	F1300100 (12)	F1300100 (15)	Flat Washers

* GCC 50 7/8" - 9 x 5½, GCC 70 & 90 1 - 8 x 6

* GCC 50 7/8" - 9 x 3, GCC 70 & 90 1 - 8 x 3½

PARTS

GMP Blades and Wear Parts



Item 3 located under tooth beds (not shown)

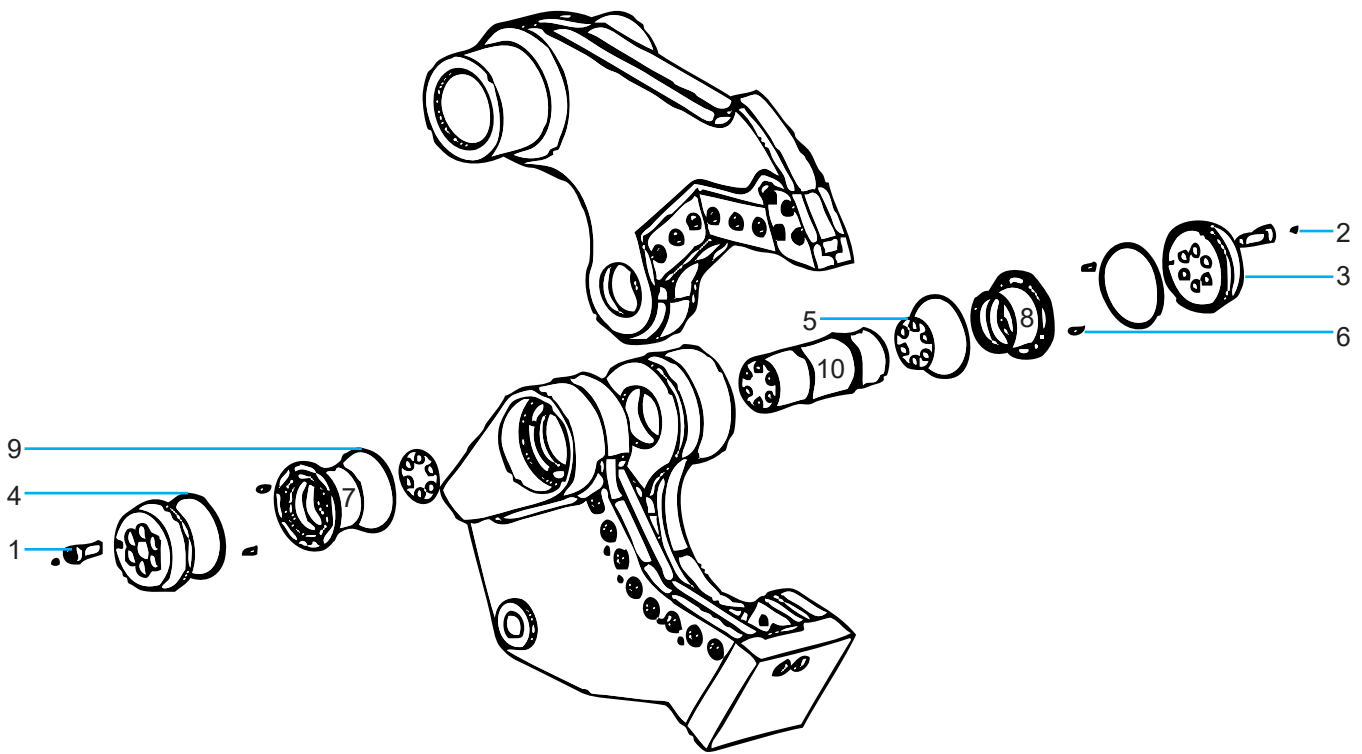
Item	Qty	Part Number			Description
		GMP 50	GMP 70	GMP 90	
1	1	4502035	4501697	4501799	Upper Tooth Bed
2	1	4502041	4501698	4501805	Lower Tooth Bed
3	4	3500530	3500530	3500530	Pucks
4	See Model	F0120070 (18)	F0124070 (19)	F0124070 (20)	Bolts*
5	See Model	F1202037 (18)	F1202444 (19)	F1202444 (20)	Washers**

* GMP 50 M20 x 2.5 x 70, GMP 70 & 90 M24 x 3 x 70

** GMP 50 M20, GMP 70 & 90 M24

PARTS

Power Series Pivot Group



All Power Series tools share common pivot group parts. The exceptions for bearings and main shafts are shown in the parts list below. The linkage shear is shown as an example.

Item	Qty	Part Number			Description
		50	70	90	
1	12	F0630080	F0630080	F0630080	End Cap Bolts, M30 x 3 x 80
2	2	6200002	6200002	6200002	Grease Fitting
3	2	3100132	3100132	3100132	End Caps
4	2	S0190447	S0190447	S0190447	O-Ring
5	2	3100172	3100172	3100172	Main Shaft Shim Set
6	4	6300134	6300134	6300134	Dowel Pins
7	1	3100131	3100131 GCC/GMP/GRS 3100130 GLS	3100131 GCC/GMP/GRS 3100130 GLS	RH Bearing
8	1	3100131	3100131	3100131	LH Bearing
9	2	S0190270	S0190270	S0190270	O-Ring
10	1	4502057 GMP/GCC 4501997 GLS	4500123 GMP/GCC 4501709 GRS 4501694 GLS	4500123 GCC 4501967 GMP 4501709 GRS 4501694 GLS	Main Shaft

TOOL LIST

The following is a list of tools available for purchase from Genesis. This list may not include every tool used for your attachment, such as those that would also commonly be used for maintaining an excavator.

Part Number	Description
6900001	Service tool kit - includes part numbers 6900002 through 6900024
6900002	1-1/2" 12-point socket, 1" drive
6900003	1-5/16" 12-point socket, 1" drive
6900004	5/8" impact hex bit socket, 3/4" drive
6900005	3/4" impact hex bit socket, 3/4" drive
6900006	3/4" drive female to 1" drive male adapter
6900007	1-1/4" combo wrench
6900008	Jet needle scaler
6900009	17mm socket, 3/4" drive, metric impact
6900010	Torque multiplier, 2000 ft/lb
6900011	3/4" drive torque wrench, 600 ft/lb
6900012	26" male/female ratchet, 1" drive
6900013	30" ratchet, 1" drive
6900014	5/16" LA hex key
6900015	1-5/16" combo wrench
6900016	7/8" combo wrench
6900017	1-1/8" combo wrench
6900018	40mm 6-point impact socket, 3/4" drive
6900019	46mm 6-point impact socket, 3/4" drive
6900020	Tool box
6900021	7/8" impact hex bit socket, 3/4" drive
6900022	1-1/2" 6-point socket, 1" drive
6900023	7/8" impact hex bit socket, 1" drive
6900024	36mm 6-point impact socket, 1" drive

BOLT TORQUE SPECIFICATIONS

Reference the product Thread Treatment Diagrams on page 52 to determine whether to use wet or dry torque values for specific bolts.

Reference Procedures on page 53 for threadlocker or anti-seize application and bolt and bolt hole cleaning.

Prior to torquing, clean all bolt holes, bolts and nuts to remove dirt, grease and oil, and identify bolt type.

Never re-torque bolts that use Loctite. If a bolt becomes loose or damaged after the initial use when Loctite was applied and the bolt was torqued, the bolt must be replaced.

Never break tightened bolts loose with a torque wrench. Doing so may break the torque wrench or take it out of calibration.

Torque wrenches should be calibrated on an annual basis.

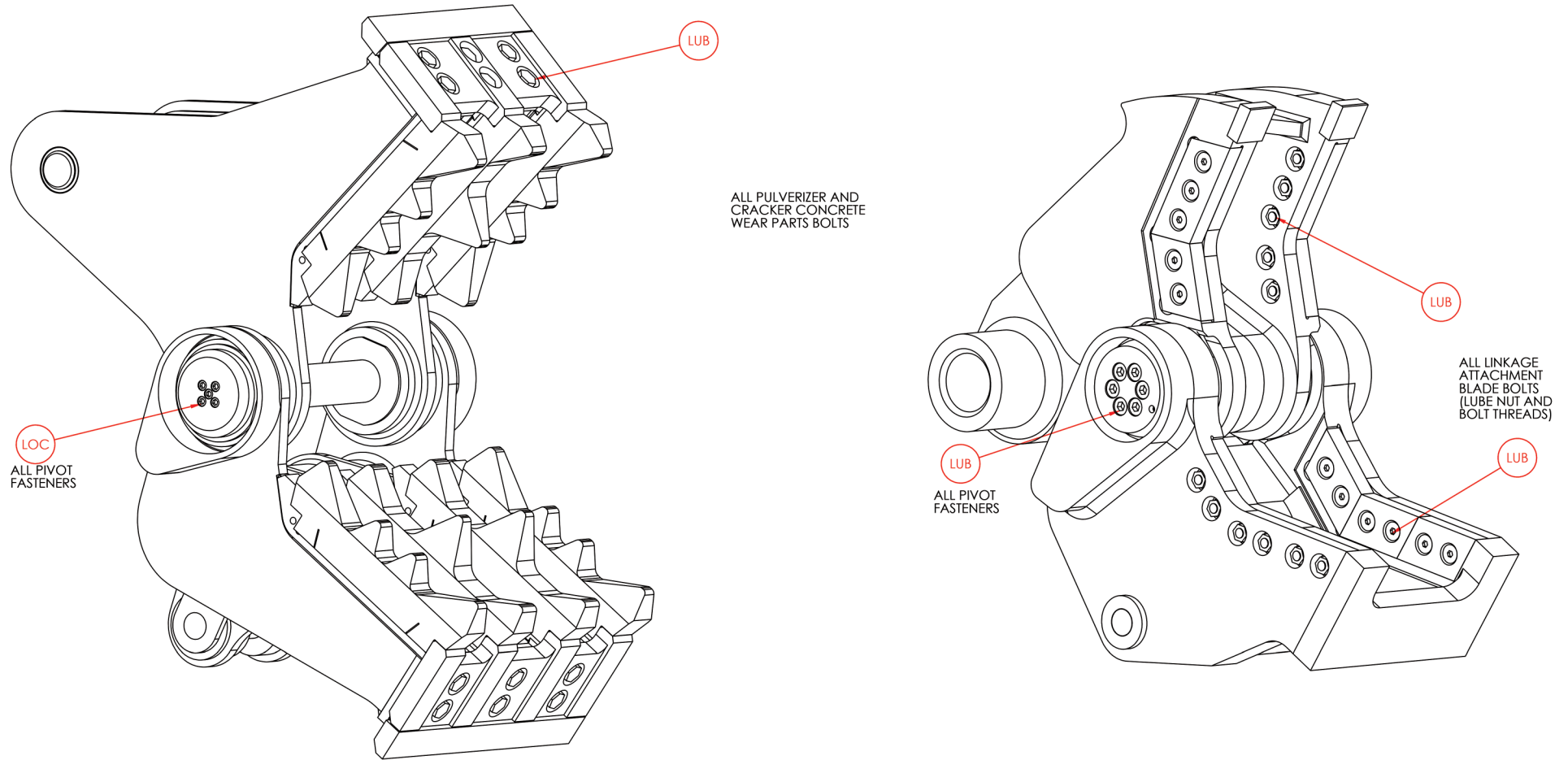
When using a torque multiplier with a torque wrench, incorrect settings will be multiplied by the ratio of the torque wrench.

Never use an impact driver on a torque multiplier.

THREAD TREATMENT DIAGRAM

Linkage Tools

Use this diagram to determine what thread treatment, if any, is required for each fastener.
For thread treatment application procedures, see page 53. For prescribed torque values, see page 55.



PROCEDURES

Reference the product Thread Treatment Diagrams on page 52 to determine which of the following procedures is required.

Cleaning

To ensure proper performance of thread treatment and accurate torque values, clean and degrease **all internal and external threads** prior to application of threadlocker, anti-seize or primer and before installation of hardware.

- Ensure both internal and external threads are free of dirt or debris.
- Use brake cleaner or similar cleaning solvent on all threads to remove any grease or oil.
- Allow threads to dry.

NOTICE

Failure to properly clean threads will cause threadlocker, primer, and/or anti-seize to not properly cure!

LOC

Threadlocker

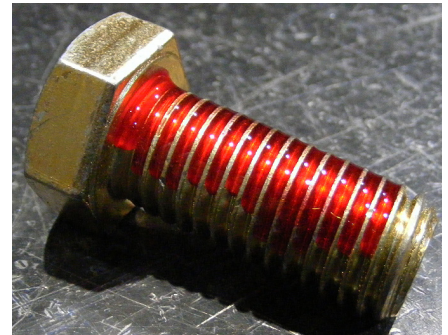
For bolted connections requiring threadlocker, use **Loctite 263** or equivalent applied using the following procedure:

- Clean and degrease all threads.
- For thru holes or nuts, apply threadlocker to bolt threads.
- For blind holes, apply stripe of threadlocker along the length of the hole (applying to the bolt can cause escaping air to remove threadlocker as the bolt is inserted).
- Torque bolt to specified **Wet Torque Value**, see page 55.

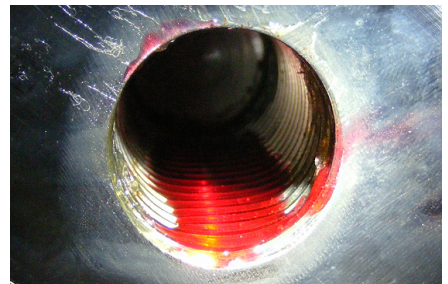
For threaded hydraulic fitting connections, use **Loctite 5452** or equivalent thread sealant in conjunction with **Loctite 7471** primer using the following procedure:

- Clean and degrease all threads.
- Apply Loctite 7471 primer to both external and internal threads and allow to dry.
- Apply threadlocker to 360 degrees of the threads on the male fitting, ensuring adequate coverage.
- Assemble fitting per directions in operator's manual.
- For O-ring boss and flat face O-ring connections, torque fittings to values specified on page 56.

Threadlocker



Blind Hole



Hydraulic Fitting



PROCEDURES

LUB

Anti-Seize

For bolted connections requiring anti-seize lubrication, use **Loctite LB8008** or equivalent using the following procedure:

- Clean and degrease all threads.
- Apply thin coat of anti-seize to internal and external threads and under bolt head and/or nut, ensuring complete coverage.
- Torque bolt to specified **Wet Torque Value**, see page 55.

Anti-Seize









DRY

No Thread Treatment

- Clean and degrease all threads.
- Torque bolt to specified **Dry Torque Value**, see page 55.

BOLT TORQUE SPECIFICATIONS

Dry Torque Values					
		Hex/Socket Head		Flat Head	
		 			
Fastener Grade	Size x Pitch	Nm	Ft-lb	Nm	Ft-lb
CL 10.9	M8 x 1.25	35	26	27	20
	M10 x 1.50	71	53	58	42
	M12 x 1.75	124	92	101	73
	M14 x 1.50	200	148	163	118
	M14 x 2.00	200	148	163	118
	M16 x 2.00	311	230	254	184
	M20 x 1.50	610	450	498	360
	M20 x 2.50	608	449	497	359
	M24 x 3.00	1054	778	861	622
	M27 x 3.00	1543	1138	1260	910
	M30 x 3.50	2095	1545	1712	1236
	M36 x 4.00	3659	2699	2991	2159
8	1/4-20	14	11	11	8
	5/16-18	32	24	26	19
	3/8-16	59	44	48	35
	7/16-14	94	70	77	56
	1/2-13	143	106	116	84
	1/2-20	162	120	133	96
	5/8-11	287	212	234	169
	3/4-10	509	376	415	300
	7/8-9	821	606	670	484
	1.00-8	1232	909	1007	727
	1.00-14	1383	1020	1130	816
	1.25-7	2463	1817	2013	1453
8/L9	1.50-6	4287	3162	3504	2529

Wet Torque Values					
		Hex/Socket Head		Flat Head	
		 			
Fastener Grade	Size x Pitch	Nm	Ft-lb	Nm	Ft-lb
CL 10.9	M8 x 1.25	29	22	23	17
	M10 x 1.50	61	45	49	36
	M12 x 1.75	105	78	85	62
	M14 x 1.50	150	111	121	88
	M14 x 2.00	170	126	138	100
	M16 x 2.00	265	196	216	156
	M20 x 1.50	456	337	372	269
	M20 x 2.50	517	382	422	305
	M24 x 3.00	894	660	731	528
	M27 x 3.00	1312	968	1072	774
	M30 x 3.50	1779	1312	1453	1049
	M36 x 4.00	3110	2294	2542	1835
8	1/4-20	13	10	11	8
	5/16-18	27	20	22	16
	3/8-16	50	37	40	29
	7/16-14	80	59	65	47
	1/2-13	122	90	99	72
	1/2-20	138	102	112	81
	5/8-11	244	180	199	144
	3/4-10	433	320	354	256
	7/8-9	698	515	570	412
	1.00-8	1046	772	854	617
	1.00-14	1175	867	960	693
	1.25-7	2095	1545	1712	1236
8/L9	1.50-6	3644	2688	2979	2150

O-RING BOSS & FLAT FACE O-RING TORQUE SPECIFICATIONS

O-Ring Boss Torque Values		
Size Dash	Nm	Ft-lb
-4	22	16
-5	27	20
-6	36	26
-8	83	60
-10	110	80
-12	187	135
-14	249	180
-16	304	220
-20	387	280
-24	498	360

Flat Face O-Ring Torque Values		
Size Dash	Nm	Ft-lb
-4	18	13
-6	30	22
-8	60	44
-10	85	62
-12	121	88
-14	121	88
-16	160	116
-20	213	154
-24	274	198

BOLT DRIVE SPECIFICATIONS

Thread Size x Pitch	Hex Head	Socket Head	Flat Head
			
Wrench/Drive Size			
M8 x 1.25	13mm	6mm	5mm
M10 x 1.50	17mm	8mm	6mm
M12 x 1.75	19mm	10mm	8mm
M14 x 1.50	22mm	12mm	10mm
M14 x 2.00	22mm	12mm	10mm
M16 x 2.00	24mm	14mm	10mm
M20 x 1.50	30mm	17mm	12mm
M20 x 2.50	30mm	17mm	12mm
M24 x 3.00	36mm	19mm	14mm
M27 x 3.00	41mm	19mm	-
M30 x 3.50	46mm	22mm	-
M36 x 4.00	55mm	27mm	-
1/4-20	7/16"	3/16"	5/32"
5/16-18	1/2"	1/4"	3/16"
3/8-16	9/16"	5/16"	7/32"
7/16-14	5/8"	3/8"	1/4"
1/2-13	3/4"	3/8"	5/16"
1/2-20	3/4"	3/8"	5/16"
5/8-11	15/16"	1/2"	3/8"
3/4-10	1-1/8"	5/8"	1/2"
7/8-9	1-5/16"	3/4"	9/16"
1.00-8	1-1/2"	3/4"	5/8"
1.00-14	1-1/2"	3/4"	5/8"
1.25-7	1-7/8"	7/8"	7/8"
1.50-6	2-1/4"	1"	1"



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CONTACT INFORMATION

Genesis Attachments

1000 Genesis Drive
Superior, WI 54880 USA

Toll Free: 888-SHEAR-IT
(888-743-2748)

Phone: 715.395.5252

E-mail:
info@genesisattachments.com

Europe/Africa/Middle East Genesis GmbH

Teramostrasse 23
87700 Memmingen, Germany

Phone: +49 83 31 9 25 98 0

Fax: +49 83 31 9 25 98 80
genesis-europe.com

E-mail:
info@genesis-europe.com

Asia Pacific Representative Office

24 Upper Serangoon View #12-28
Singapore 534205

Phone: +65 9673 9730

E-mail:
tchoo@genesisattachments.com

Central America & Colombia

Cra 13A #89-38 / Ofi 613
Bogota, Colombia

Phone: +57 1 610 8160 / 795 8747

E-mail:
contact@themsagroup.com

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