GMS Pro Series

GMS All Models
Operation/Safety/Installation/Maintenance

November 2008
PREFACE
To ensure years of safe, dependable service, only trained and authorized persons should operate and service the shear. It is the responsibility of the operator to read, fully understand and follow all operational and safety-related instructions in this manual. Do not operate the shear until you have read and fully understand these instructions. Always use good safety practices to protect yourself and those around you.

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

IMPORTANT
THIS OPERATORS MANUAL MUST REMAIN WITH THE SHEAR AT ALL TIMES!

Should it become damaged or lost, immediately contact any authorized Genesis dealer or contact the Genesis Service Department at 888-743-2748 or 715-395-5252 for replacement.

Genesis has made every effort to provide information as complete and accurate as possible for its shears. However, because of owner requirements, equipment and control, variations may exist. In addition, due to Genesis policy of continually striving to improve its products, occasional discrepancies may exist between individual shears and the descriptions and information contained herein.

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

**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 INJURY OR PROPERTY DAMAGE COULD RESULT IF THE INSTRUCTIONS ARE NOT FOLLOWED PROPERLY.

THIS SYMBOL BY ITSELF OR USED WITH A SAFETY SIGNAL WORD THROUGHOUT THIS MANUAL IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY OR THE SAFETY OF OTHERS. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.
GENERAL SAFETY

NEVER OPERATE AN EXCAVATOR WITHOUT SAFETY GUARDS INSTALLED.

Safety glass and wire mesh cab guarding must be installed to protect the operator from flying debris that may be created during processing. Falling Object Protection Structures, or FOPS, are necessary for any application where material is to be handled overhead. AVOID THIS SITUATION WHENEVER POSSIBLE.

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.

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

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.

Do not operate if an unsafe condition exists. Stop operation immediately, shut down the machine and report the unsafe condition to the proper authority.

DO NOT OPERATE POORLY MAINTAINED, FAULTY EQUIPMENT. INFORM THE PROPER AUTHORITY AND DO NOT RESUME OPERATION UNTIL THE PROBLEM HAS BEEN FIXED.
GENERAL SAFETY
OPERATOR QUALIFICATIONS

Only trained and authorized persons should operate the machine. To be qualified, you must understand the written instructions in this manual, receive training including actual operation of this machine, and know all safety rules and regulations of the job site.

Do not operate the machine until you fully understand the function of all controls, indicators and instruments.

PERSONAL SAFETY

Use all protective clothing and safety devices dictated by 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

AVOID ENTANGLEMENT HAZARDS. DO NOT WEAR CLOTHING OR JEWELRY THAT COULD GET CAUGHT IN MACHINERY AND CAUSE INJURY. KEEP HANDS, FEET, HAIR AND CLOTHING AWAY FROM MOVING PARTS. KEEP HANDS AND FEET WITHIN THE OPERATOR PLATFORM.

KNOW THE PINCH POINTS, CRUSHING POINTS AND ROTATING PART OF THE EQUIPMENT AND AVOID THEM. ALL SAFETY GUARDS MUST BE IN PLACE.

Always know where to get assistance in case of an emergency. Know where to locate and how to use safety equipment such as a first aid kit and fire extinguisher.

Report all injuries to your supervisor or as directed.
GENERAL SAFETY
MACHINE STABILITY

Your Genesis shear is sized for excavator stability when properly operated. 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 EXCAVATOR COUNTER WEIGHT.

The following conditions affect stability:
• Ground conditions
• Grade
• Weight of attachment
• Contents of attachment
• Operator judgement

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 the controls until you have read and fully understand the safety statements in this manual and the manual for your excavator. Determine the control for each function before operating the excavator.

Familiarize yourself with the excavator and processor before attempting to process material. Have the excavator moved to a wide open area. The area should be solid, level, and free of obstacles such as people, equipment, buildings and power lines. With the excavator engine running at a reduced speed, operate one control at a time. Continue this practice until you have learned and become comfortable with the function of each control.
GENERAL SAFETY
BEFORE OPERATING

Check the Equipment

Before beginning each shift, take the time to check the equipment and have all systems in good operational condition.

Check the following:
• Warning decals, special instructions and operators manuals. Make sure they are legible and in the proper location.
• Grease fittings. Pump grease at all fitting locations.
• 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.
• Rotation bearing. Visually check for loose or damaged bolts. If repair is required, refer to qualified personnel.
• Grease rotation bearing and pinion gear.

Know the Work Area

Check clearances in the work area. Keep all bystanders at a safe distance. Do not work under obstacles within the working range of the shear. Check the location for overhead and buried power lines or other utilities before operation.

Check ground conditions. Be aware of unstable or slippery areas and avoid them.

Know the Rules

Most employers have rules governing proper operation and maintenance of equipment. Before starting work at a new location, ask your supervisor or safety coordinator about rules you are expected to obey.

Understand traffic rules at your job site. You must recognize and understand all signs, flags and markings; hand, flag, whistle, siren and bell signals.

Position the Shear

Position the excavator on firm level ground. Do not operate on slippery ground conditions.

If level ground is not possible, position the excavator to use the shear to the front or back of the excavator. Avoid working over the side of the excavator.

To avoid tipping and slipping, do not park on a grade exceeding 10% (one-foot rise over the span of a ten-foot run).
GENERAL SAFETY
OPERATION SAFETY

Safe operation is the responsibility of the operator. Improper use of the machine can lead to dangerous situations for yourself, those around you, the machine and the work area. Practice safe working habits and be aware of hazardous conditions.

Thoroughly read and understand this entire manual. Follow all safety rules and practices explained in this manual.

Be seated in the operator’s seat at all times while operating the shear.

Do not operate without lights if conditions require them. If lights are required and your excavator is not so equipped, contact your excavator dealer for a lighting package.

Do not operate under the influence of drugs or alcohol, which can affect your alertness and coordination. If you use prescription or over-the-counter drugs, get medical approval to operate the equipment.

Do not allow riders on the shear. Do not use the shear as a personnel lift or work platform.

Report all accidents to your supervisor or as directed.

Rotation systems are designed to position the shear during operation, not as a locking or supporting system during maintenance. Always use proper blocking procedures during maintenance for operator safety.

Start Up

During initial operation and any time jaw maintenance has been performed, process thin and lighter material first to “work harden” wear areas, developing a harder, more durable edge. This is also the most effective time to process materials such as sheet metal or wire. The new or repaired edges will cut more efficiently and be less likely to get material jammed between the blades.

When operating in temperatures below freezing, it is also important to process light materials first. This allows the shear’s structural material to “warm up,” preventing thermal cracking.
**GENERAL SAFETY**

**OPERATION SAFETY**

Starting Procedure

Before operating, walk completely around the machine 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 excavator 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 the shear to a rest position on the ground.
- Shut off the excavator engine.
- Work controls in all directions to relieve hydraulic pressure.

If shear maintenance or service is to be performed, make sure the shear body is properly blocked to prevent accidental rotation of the shear onto operator or mechanic. Do not rely on rotation motor or other rotation components to inhibit movement of the shear during maintenance or servicing.

**Process Material Safely**

Do not process hardened steel material such as tool steel, railroad rail, axles or machined parts. Hardened material breaks, rather than shearing, which may cause flying debris.

Do not operate any functions of the excavator while cutting with the shear, including boom and drive functions.

Do not pull down structures with the shear. Doing so may cause falling debris, or material may break free and exceed the capacities of the excavator, causing a tipping hazard.

The rotator should only be used for positioning the shear. Do not use the rotator to pry or break material.
GENERAL SAFETY

OPERATION SAFETY

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. Doing so will void warranty and may cause structural damage, accidents or tipping.

Make sure the load is held securely in the shear jaws. Do not move a loaded shear if load is loose or dangling.

Make sure the load is pinched between the shear jaws – never cradle a load.

For greater stability, knuckle the shear 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 shear, or anything held in the shear jaws, over people, equipment or buildings.

Place the load gently. Do not throw or drop the contents of the shear.

Operate the controls smoothly and gradually. Jerky controls are hazardous and may cause excavator damage.

USE THE SHEAR ONLY AS DESCRIBED IN THIS MANUAL. DO NOT USE THE SHEAR TO LIFT AND MOVE OTHER OBJECTS. DOING SO MAY CAUSE INSTABILITY AND TIPPING.
SHEAR MARKINGS

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

SHEAR INSTALLATION

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

Note: The shear is usually shipped in an upright position. Extreme care must be used when inverting the processor for installation.

**WARNING**

REMOVING ANY CONNECTING PIN MAY BE HAZARDOUS. TO REMOVE A CONNECTING PIN, POSITION THE SHEAR ON THE GROUND AND PROPERLY SUPPORT.

PARTICLES MAY FLY WHEN A PIN IS STRUCK. USE A DRIFT PIN OR MALLET WHEN STRIKING PINS. KEEP ALL PERSONNEL AT A SAFE DISTANCE.

Remove bucket or other stick attachments, following the excavator OEM’s removal and safety instructions.

Position the shear upside down on a hard, flat surface (flatbed truck or solid ground).

Track the excavator to the shear with the jaws facing the operator. Lift the excavator stick over the shear, carefully positioning the stick tip connection with the shear mounting main pivot bore. Pin the excavator stick to the processor.

Slowly raise the boom to lift the shear, allowing the shear cylinder pivot connection to come within range of the excavator cylinder stroke.
INSTALLATION

SHEAR INSTALLATION

Extend the excavator cylinder until the rod-eye/linkage bore lines up with the shear cylinder pivot connection. Pin excavator cylinder to the shear.

Install excavator hydraulic hoses, supply and return, from the stick tip to the shear manifold blocks.

BE SURE HYDRAULIC PRESSURE IS RELIEVED BEFORE DISCONNECTING HYDRAULIC FITTINGS. REMOVE NECESSARY FITTINGS SLOWLY.

ROTATOR INSTALLATION

The rotator requires a ½” case-drain line, with a rated minimum 250 PSI working pressure, from the rotation head of the shear to the filter on the excavator hydraulic reservoir. The maximum case-drain pressure measured at the shear while rotating and cycling the jaws must never exceed 125 PSI.

Use the correct fittings. Secure the case-drain line to the excavator stick.

Foot Switch Installation

Install the foot switch in the excavator and connect with electrical harness. Consult excavator dealer when using an alternate to the Genesis supplied foot switch.
The rotator requires an additional hydraulic circuit. One of the three available options has been supplied with the shear. These diagrams show the installation of the additional circuit. Refer to the Hydraulic/Rotation Maintenance section of this manual for valve descriptions, functions and settings.
Genesis shears are designed to operate under full excavator pressure or up to 5000 PSI. Due to these high pressures, it is important that air is bled from the shear cylinder after installation. Failure to follow these procedures could result in cylinder seal damage and/or excavator hydraulic system damage.

Start-up Procedure:

Check the excavator hydraulic tank for proper fluid level.

Follow the OEM procedures for starting and warm-up of the excavator hydraulic system. Do not operate the shear circuit during the warm-up period.

After the excavator has reached normal operating temperature, set the engine to idle speed.

Slowly fill the bore end of the shear cylinder to partially close the jaws.

Slowly fill the rod end of the shear cylinder to open the jaws. Note: Do not fully extend or retract shear cylinder with the first cycles. Use partial strokes extending and retracting, slowly working to full strokes.

Stop and check the excavator hydraulic fluid level again to be sure there is still sufficient fluid. Service as required.

Cycle the shear jaws five or six strokes before increasing the full operating pressure.
Only trained and authorized persons should perform maintenance on the shear. To be qualified, you must understand the instructions in this manual, have training, and know the safety rules and regulations of the jobsite.

Do not alter or change the physical, mechanical or hydraulic operation of the shear. 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 shear 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.

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

Do not work on the shear 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

MAINTENANCE SAFETY

DO NOT WORK ON ANY HYDRAULIC LINES OR COMPONENTS WHILE THEY ARE PRESSURIZED. ESCAPING HYDRAULIC FLUID CAN PENETRATE THE SKIN, CAUSING SERIOUS INJURY OR DEATH. RELIEVE PRESSURE BEFORE PERFORMING MAINTENANCE. KEEP HANDS AND BODY PARTS AWAY FROM PIN HOLES AND NOZZLES, WHICH EJECT FLUIDS UNDER HIGH PRESSURE. USE A PIECE OF CARDBOARD TO SEARCH FOR LEAKS.

IF FLUID IS INJECTED INTO THE SKIN, SEEK MEDICAL ASSISTANCE IMMEDIATELY FROM A DOCTOR FAMILIAR WITH THIS TYPE OF INJURY.

HYDRAULIC OIL BECOMES HOT DURING OPERATION. DO NOT LET HYDRAULIC OIL OR COMPONENTS CONTACT SKIN, AS IT COULD CAUSE SEVERE BURNS. ALLOW HYDRAULIC COMPONENTS TO COOL BEFORE WORKING ON THEM. USE PROTECTIVE CLOTHING AND SAFETY EQUIPMENT.

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.
MAINTENANCE

MAINTENANCE SCHEDULE

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

After the first 80 hours of operation, check all bolts, including slewing ring bolts. Change gearbox lube after first 50 hours of operation.

Extreme operating conditions may require shortened maintenance intervals.

Scheduled Maintenance

• Replace slewing ring bolts every 2000 hours.
• Check gearbox lube every 250 hours. Change annually.
• Replace regeneration valve components every 4000 hours.
• Reseal cylinder every 4000 hours.

See following page for maintenance to be performed every eight hours of operation.
MAINTENANCE
MAINTENANCE SCHEDULE

Eight-Hour Checklist

Inspect:
- Bolts - replace loose or damaged
- Fittings and hoses for damage or leaks
- Bracket pivot for wear and pin retainers
- Cylinder pivot for wear and pin retainers
- Entire shear for cracks (visual check)

Grease:
- Bracket pivot
- Bracket cylinder
- Shear cylinder butt (two pumps per fitting)
- Shear cylinder rod (two pumps per fitting)
- Autoguide
- Main shaft/pivot (both sides)
- Rotation bearing (four locations)
- Rotation head (two locations)

Jaws and blades:
- Check autoguide gap
- Check gap between guide blade and wear plate
- Check blade tolerance*
- Check blade edge radius*
- Check for loose or damaged bolts
- Check autoguide and shim if needed
- Buildup and hardsurface as required

*See blade maintenance information in this manual regarding maximum tolerance and radius for your specific shear model.
MAINTENANCE

GREASE

Use a lithium-based premium EP #2 in normal conditions above 32° F (0° C). Use Grade 0 in temperatures below freezing.

The shear jaws must be closed for access to all grease fittings. Grease all fittings every eight hours of operation (see eight-hour checklist).

After greasing the rotation bearing, rotate the shear through two full rotations.

Grease locations:
1. Bracket pivot
2. Bracket cylinder
3. Shear cylinder butt
4. Shear cylinder rod
5. Main shaft/pivot (both sides)
6. Rotation bearing (two locations)
7. Rotation head (two locations)
8. Autoguide
Genesis typically uses dry torque measurements, but there are exceptions, such as piercing tip bolts, which are lubricated.

Prior to using the chart below, clean all bolt holes, bolts and nuts to remove dirt, grease and oil. See Bill of Materials to identify bolt type.

Never retorque bolts that use Loctite. After initial use, when Loctite was applied and bolt was torqued, if the bolt becomes loose or damaged, it must be replaced.

### Dry torque values

<table>
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<tr>
<th>Fastener</th>
<th>Grade</th>
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<td>Hex/Flat Head with Nut</td>
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<tr>
<td>Size x Pitch</td>
<td>N-m</td>
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### Wet torque values

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JAW AND BLADE MAINTENANCE

Blade and blade seat maintenance greatly affect performance. To maximize cutting performance and optimize the life of replaceable parts, follow this specific sequence of checks, adjustments and maintenance.

1. Autoguide - adjust to keep within tolerance; replace when worn.

2. Guide Blade - rotate, shim to tolerance, and replace when worn.

3. Upper Wear Plate - replace when new guide blade is installed

4. Upper and Lower Blades - rotate and replace when all edges are worn. Shim lower blades to tolerance.

5. Piercing Tip - build up to maintain square.

6. Razor Blade - rotate; replace when all four edges are worn.

7. Jaw Hardfacing - build up and hardsurface as needed.

Blade Bolts

Visually check for loose or broken bolts daily. Retorque loose bolts to the specifications listed in the torque chart in this manual. Replace broken bolts.

AUTOGUIDE

The autoguide (or puck) is an adjustable wear part that makes light contact with the wear surface of the upper jaw to maintain proper jaw alignment. Check the puck daily for wear or damage, replacing when necessary. Tolerances between the puck and the wear surface should be .005” to .010”. Check tolerances every 40 hours of operation and shim as needed.

Never overtighten the puck against the wear surface.
JAW AND BLADE MAINTENANCE
AUTOGUIDE

Autoguide Adjustment Procedure

Always perform puck maintenance before checking blade tolerances.

To maintain the proper gap:

- Slowly close the upper jaw until the puck is centered on the wear surface.
- Remove the lock plate.
- Tighten the adjustment screw by hand until the puck makes light contact with the wear surface.
- Install the lock plate and turn counterclockwise (loosen) until bolt holes align; install and torque bolts.
- Check gap with feeler gauge.

GUIDE BLADE

After adjusting the autoguide, check guide blade tolerances. When necessary, shim the guide blade to keep the gap within the specifications listed on the blade gap table. Do not attempt to shim the upper wear plate.

The top and bottom of the blade may be shimmed differently to maintain squareness. The difference should not be greater than .050" (1.3mm).

Rotate the guide blade when shim thickness exceeds .050" (1.3mm). Replace the guide blade when more than .100" (2.5mm) of shims are required to maintain the tolerances listed on the following table.

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>.005&quot;</td>
<td>.020&quot;</td>
</tr>
<tr>
<td>400/500/700</td>
<td>.010&quot;</td>
<td>.025&quot;</td>
</tr>
<tr>
<td>1000</td>
<td>.015&quot;</td>
<td>.030&quot;</td>
</tr>
<tr>
<td>1400</td>
<td>.020&quot;</td>
<td>.035&quot;</td>
</tr>
</tbody>
</table>
JAW AND BLADE MAINTENANCE

GUIDE BLADE

Guide Blade Shimming

Slowly close the jaws so the upper wear plate begins to bypass the guide blade. Stop the jaw and check the gap between the guide blade and wear plate.

Cycle the shear slowly, stopping at several points along the wear plate 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 blade bolts and slide shims between the guide blade and guide blade seat.

Retorque bolts and recheck the gap.

Guide Blade Rotation

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

Guide Blade Replacement

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

WEAR PLATE

Upon installing a new wear plate, repeat the guide blade shimming procedure before cycling jaws. Failure to do so may cause interference.

Wear plate bolts are treated with Loctite 262 and torqued. The wear plate and bolts must be heated in order to release the Loctite, before removing the bolts and wear plate.

Once the wear plate has been removed, thoroughly clean the area. Install the new wear plate. Apply Loctite 262 to bolts and torque to 190 ft-lb (258 N-m).
**JAW AND BLADE MAINTENANCE**

**CUTTING EDGES**

Optimal shear performance requires proper maintenance of the cutting edges. Blade rotation extends blade life. Shimming to maintain blade tolerances helps prevent jamming. Dull blades make the excavator hydraulic system work harder and may cause structural damage to the shear.

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 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 objects.

**Shear Blade Removal**

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

If blades remain tight, insert a 7/16” 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.

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

Do not remove the adjustment plates from the lower jaw. These plates are custom-machined for each shear jaw set and need only be replaced when damaged. Replacement plates can be ordered from your Genesis dealer or the Genesis parts department with the serial number of your processor.

Do not grind on blade seat areas.
JAW AND BLADE MAINTENANCE

CUTTING EDGES

Blade Rotation

Inspect blades every eight hours of operation. Retorque loose bolts and replace broken bolts. Rotate blades when the cutting edges are worn to a 1/8" (3mm) radius.

Recommended rotation intervals are approximately 40-80 hours of operation for upper blades and 24-32 hours for lower blades, 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" (3mm) radius.

The illustrations on this page are for upper blade rotation. Illustrations and instructions for lower blade rotation are on the following page.

Copy (enlarge if necessary) and use these charts to track blade rotation.

<table>
<thead>
<tr>
<th>40-80 Hours</th>
<th>Date</th>
<th>Hour Meter</th>
<th>Performed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>24-32 Hours</th>
<th>Date</th>
<th>Hour Meter</th>
<th>Performed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotation 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
JAW AND BLADE MAINTENANCE
CUTTING EDGES

Blade Rotation

Original Blade Configuration

Main pivot position

Apex position

Secondary blade

Primary blades

Third Rotation
Rotate the secondary blade end-for-end

First Rotation
Rotate the secondary blade end-for-end

Second Rotation
Move the secondary blade (X) to the primary main pivot position; rotate front-to-back.
Move the primary apex blade (Y) to the secondary position; rotate front-to-back.
Move the primary main pivot blade (Z) to the primary apex position; rotate end-for-end.

Fourth Rotation
Move the secondary blade (Y) to the primary main pivot position; rotate front-to-back.
Move the primary apex blade (Z) to the secondary position; rotate front-to-back.
Move the primary main pivot blade (X) to the primary apex position; rotate end-for-end.

Fifth Rotation
Rotate the secondary blade end-for-end
JAW AND BLADE MAINTENANCE
CUTTING EDGES

Blade Gap

After each blade rotation, shim lower blades to eliminate the slight gap between upper and lower blades. Do not shim the upper blades. Use only Genesis shim kits. See the following table for blade gap tolerances.

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>.005&quot;</td>
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<td>.025&quot;</td>
</tr>
<tr>
<td>1400</td>
<td>.020&quot;</td>
<td>.030&quot;</td>
</tr>
</tbody>
</table>

Blade Gap Measuring Procedure

Slowly close jaws until blades begin to bypass. Check blade gap with a feeler gauge.

Continue closing the jaws and checking the gap 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 correctly.

If blade gap exceeds the maximum listed on the table above, shim lower blades. Blades must be replaced when gap exceeds 0.115".

Shimming Procedure

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 0.100" of shims.
Proper maintenance of the piercing tip boosts productivity and prevents material jams. Inspect the piercing tip daily for wear, and perform maintenance every 20-80 hours, depending on the application.

Slowly cycle the shear until the piercing tip is flush with the top edge of the razor blade.

Check the gap with a tape measure. Acceptable gap is 3/8" - 3/4" (10-19mm).

Check the condition of the piercing tip with a straight edge or square. Check the profile along the blades.

If the piercing tip is only slightly worn, it can be built up following the build-up and hard-surfacing procedure in this manual. This may be done four to six times. When the tip is severely worn, it must be replaced.

**Piercing Tip Replacement**

Important: Remove the upper secondary blade and upper wear plate during this procedure to prevent damage.

Preheat the tip area to 350°F (177°C), six to eight inches around the tip. Maintain this temperature throughout the procedure. Do not exceed 400°F interpass temperature.

Air arc to remove the piercing tip. Clean the pocket and chamfer the perimeter at 5/8 x 45° angles.

Position and tack the new piercing tip in place, square with the blades.

Weld with AWS E7018 electrode. Begin with the sides, filling in the chamfered area with single passes, alternating sides and peening each pass. Weld the back and front following the same method.

When welding is complete, grind the welds flush on each side.
**JAW AND BLADE MAINTENANCE**

**PIERCING TIP**

Piercing Tip Replacement

Cycle the jaw slowly to check for interference.

Cover with heat blanket and allow to cool slowly.

DO NOT put unit into operation until cool, approximately eight hours.

**RAZOR BLADE**

Check the razor blade for wear every eight hours of operation. Rotate when worn. The first rotation is 180˚, bringing the bottom edge to the top. The second rotation is 90˚, bringing a side edge to the top. The third rotation is 180˚, using the final edge.

After rotation, check gap between razor blade and piercing blades. If gap exceeds maximum tolerance after new piercing blades have been installed, the razor blade must be replaced. Do not shim the razor blade.
Building up and hardsurfacing the jaws will keep blades in good adjustment and prevent damage to the parent material.

Hardsurfacing should not be performed until the jaws are work-hardened. Work-hardening can take up to 80 hours. However, jaws cannot be allowed to wear lower than the height of a new blade. If either jaw wears down lower than blade height, immediately stop operating the shear and perform build-up and hardsurfacing.

Before performing build-up and hardsurfacing, know and understand the following rules. Use the procedure outlined on the following page.

Before build-up and hardsurfacing:
- Remove adjacent blades, as preheating and welding may cause blade damage.
- Wearing an approved respirator, grind the area to clean it and remove all existing hardsurfacing.

During build-up and hardsurfacing:
- Maintain the radius in the apex of the jaws.
- Do not apply hardsurfacing directly to the parent material, as this could cause toe cracking and the hardsurfacing will break away.
- 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.
- Stagger the ends of the stringer welds so they do not end in a straight line.
- Do not start or stop welds directly above a bolt hole or in the apex of the jaw.

After build-up and hardsurfacing:
- Cover the area with a heat blanket and allow it to cool slowly, approximately eight hours.
- Do not put the shear into operation until the welds have been allowed to cool.
JAW AND BLADE MAINTENANCE
BUILD-UP AND HARDSURFACING

Procedure:

Determine the area to build up, using a straight-edge or square.

Preheat area to 350˚F (177˚C). Maintain this temperature throughout the procedure. Do not exceed 450˚ interpass temperature.

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

After build-up is complete, grind material to original profile.

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.

Cap each stringer bead with one pass of GenWire or GenRod to hardsurface. Do not apply more than two layers of hardsurfacing. Peen each pass.

Grind the ends of all stringer welds, with the grain to taper 1” to 1-1/2” (31-38mm) to the parent material.

**Piercing Tip**

Apply single passes of E10018 (or equivalent) underlayment side-by-side.

When build-up is complete, apply single passes of hardfacing.

Grind the outside edges square.
JAW AND BLADE MAINTENANCE
BUILD-UP AND HARDSURFACING

Upper Jaw
Single passes approximately 1” apart. Begin just behind the piercing blade seats and continue toward the throat. Use three to five stringers, depending on the model of the processor.

Upper Jaw Face
Single passes approximately 1” apart. Begin at the bottom of the upper face and continue approximately 2/3 up the front face.

Lower Jaw
Single passes approximately 1” apart. Work across the top of the chin plate and along the lower jaw toward the throat. Use two to three stringers, depending on the model of the processor.

Lower Jaw Chin
Crosshatch the chin plate with stringer beads at 45° angles to form 1” squares.
HYDRAULIC/ROTATION
MAINTENANCE

HYDRAULIC REQUIREMENTS

Operating the shear below the recommended flow and/or pressure range will adversely affect performance.

Operating the shear above the recommended flow and/or pressure range may cause damage to the shear and its hydraulic components.

OPERATING ABOVE RECOMMENDED FLOW AND/OR PRESSURE MAY CREATE A DANGEROUS SITUATION.

ROTATION VALVE

Rotation Valve Input

For cooler and more efficient hydraulic system operation, set the input pressure at the lower end of the pressure range.

The maximum case drain measured at the processor while rotating and cycling the jaws must never exceed 125 PSI.

Rotation Valve Settings

When checking the cross-over relief valve settings, put pressure gauges on both diagnostic ports. Subtract the lower reading from the higher reading.
HYDRAULIC/ROTATION MAINTENANCE

GENFLOW REGENERATION VALVE

Your regeneration valve features a GenFlow adjustment cartridge to control the timing of the shift between speed and power modes. When the cartridge is properly set, the shear closes rapidly until it begins to cut. The valve shifts, slowing jaw close and increasing power. You may hear a squeal or hiss as this happens. The valve shifts back into speed mode after the cut is complete.

The cartridge is factory-set, turned out approximately seven turns. This setting is appropriate for most applications. However, the cartridge may be custom-set if necessary.

Regeneration valve adjustment is a two-person job. The ground crew must be in full view of the operator at all times and must stand clear of the shear jaws when cycling. Check the cycle time when the hydraulic fluid is warmed up, timing from full open to full closed and back to full open. To increase power, turn adjustment cartridge out (counter-clockwise). To increase speed, turn in (clockwise).

SHUT DOWN AND DISABLE HYDRAULICS BEFORE ADJUSTING THE CARTRIDGE.

Loosen the lock nut with a 17mm socket.

Turn cartridge 180° (half-turn) with a 5mm allenhead socket.

Tighten lock nut.

Check the cycle time.

Repeat until the preferred balance of speed and power is met. Final adjustment may require less than half-turn.
HYDRAULIC/ROTATION
MAINTENANCE
SLEWING RING

Visually check slewing ring (rotation bearing) bolts every eight hours of operation and replace every 2000 hours. Do not reuse or retorque these bolts. Immediately replace a loose or broken bolt, and replace the bolts on either side of it. Apply Loctite to the bolt threads and under the bolt head per Loctite instructions.

**IF LOOSE BOLTS ARE FOUND, DO NOT OPERATE THE SHEAR. CONTACT THE FACTORY.**

The bolts that secure the slewing ring are critical to safe operation of the shear. Improper bolt torques may cause the bolts to fail and allow the shear to break free. This may result in serious personal injury and damage to equipment. Improper torques will also cause uneven wear on the slewing ring.

Rotating components must be greased daily. Grease fittings are located on the outside of the slewing ring and on the inside of the rotating head assembly. Grease locations are marked with decals.

**STAND CLEAR WHEN THE SHEAR IS BEING ROTATED. ALWAYS STAY IN CLEAR VIEW OF THE OPERATOR.**

Grease each fitting. Rotate the shear two full rotations after greasing each fitting.

For normal conditions above 32°F (0°C), use a lithium-based, premium grade 2 extreme pressure grease. For temperatures below 32°F, a grade 0 grease is recommended.
Proper lubrication is critical to ensure performance and long life of the gearbox. Change gearbox lubricant after the initial 50 hours of operation. Check gearbox lubricant every 250 hours. See table for recommended grades and lubricant change-out schedule based on climate.

**Gearbox Lube Change-out Procedure**

Position shear so gearbox is level (horizontal) at a convenient working height.

Remove rotator access cover and place an oil drain pan under gearbox drain plug.

Remove bottom drain plug and top fill plug.

Once drained, replace bottom drain plug.

Add appropriate amount of gearbox lubricant through fill plug. See table for fill capacities. Do not overfill.

Replace fill and inspection plugs. Reinstall access cover.

Properly dispose of used lubricant.

### Low Temp. Grade Change

<table>
<thead>
<tr>
<th>Low Temp.</th>
<th>Grade</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>5°F (-15°C)</td>
<td>SAE 80W-90W</td>
<td>500 hours or annually</td>
</tr>
<tr>
<td>-50°F (-45°C)</td>
<td>Synthetic ISO 150</td>
<td>1000 hours or two years</td>
</tr>
</tbody>
</table>

### Gearbox Lube Change-out Procedure

1. Position shear so gearbox is level (horizontal) at a convenient working height.
2. Remove rotator access cover and place an oil drain pan under gearbox drain plug.
3. Remove bottom drain plug and top fill plug.
4. Once drained, replace bottom drain plug.
5. Add appropriate amount of gearbox lubricant through fill plug. See table for fill capacities. Do not overfill.
6. Replace fill and inspection plugs. Reinstall access cover.
7. Properly dispose of used lubricant.

<table>
<thead>
<tr>
<th>Model</th>
<th>Ounces</th>
<th>Milliliters</th>
</tr>
</thead>
<tbody>
<tr>
<td>300-500</td>
<td>32</td>
<td>950</td>
</tr>
<tr>
<td>700-1400</td>
<td>68</td>
<td>2010</td>
</tr>
</tbody>
</table>
HYDRAULIC/ROTATION MAINTENANCE

ROTATION CIRCUIT

To meet diverse customer needs, Genesis offers three rotation valve options. They vary in mounting, function, factory-supplied and customer-supplied parts, and operating advantages. For information on each type of rotation circuit, see the chart below and information on the following pages.

Valves are factory-set and should not need adjustment. If you believe adjustment is necessary, contact the Genesis Service Department.

All rotation circuits use the same procedure for setting flow:

Rotate shear, timing one complete revolution.

Adjust corresponding flow control until revolution time is 14-16 seconds.

Repeat in opposite direction.

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Auxiliary Valve</th>
<th>Gear Pump</th>
<th>Accumulator Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>On shear</td>
<td>Crossover relief on processor; valve on excavator</td>
<td>On shear</td>
</tr>
<tr>
<td>Function</td>
<td>Supplies crossover relief for rotation motor; regulates pressure and flow</td>
<td>Supplies crossover relief for rotation motor; unloads gear pump; provides directional control.</td>
<td>Oil from jaw open/close circuit charges accumulator; shear rotates when accumulator is electrically actuated</td>
</tr>
<tr>
<td>Factory Supplied</td>
<td>Valve</td>
<td>Valves; footswitch and wire harness</td>
<td>Accumulator; valve; footswitch and wire harness</td>
</tr>
<tr>
<td>Customer Supplied</td>
<td>Rotation circuit with directional control from excavator; case drain</td>
<td>Gear pump; case drain; must install wiring</td>
<td>Case drain; must install wiring</td>
</tr>
<tr>
<td>Advantage</td>
<td>Allows shear to open/close and rotate simultaneously</td>
<td>Allows shear to open/close and rotate simultaneously</td>
<td>Lower installation cost; easier move to other excavators</td>
</tr>
</tbody>
</table>
Setting the crossover relief:

1. Increase supply pressure to the rotation valve to 2500 PSI.

2. Install pressure gauges on relief test ports.

3. Plug hoses at motor or secure the processor from rotating.

4. Pressurize the valve to rotate.

5. Adjust the corresponding relief valve to the pressure specified in the table for rotation valve settings.

6. Repeat for the other direction.

7. Reduce supply pressure to the pressure-reducer valve setting specified on the table for rotation valve settings.
Setting the crossover reliefs:

1. Install a pressure gauge on the unloading valve, unplug the wires to the directional valve, and energize the valve on the unloading valve.
2. Adjust the unloading valve to 2500 PSI.
3. Reconnect the wires to the directional valve.
4. Plug hoses at motor or secure the shear from rotating.
5. Press the switch to rotate left or right.
6. Adjust the corresponding relief valve to the pressure specified in the table.
7. Repeat for the other direction.
8. Set the unloading valve before operating.

Setting the unloading valve:

1. Install a pressure gauge on the unloading valve, unplug the wires to the directional valve and press the switch to rotate left or right.
2. Adjust the unloading valve to the pressure specified in the table.
3. Plug the wires back into the directional valve.
Setting the crossover reliefs:

1. Install pressure gauges on the G1 and G2 ports of the control valve assembly.

2. Disconnect hoses from motor; plug ports A and B on the control valve.

3. Close jaws and hold full pressure to close.

4. Energize the circuit to rotate the shear.

5. Measure pressure at G1 and G2 ports; subtract low number from high number.

6. Release pressure and adjust the corresponding relief valve, if needed, to achieve correct relief pressure.

7. Repeat steps 3-6 to reach correct setting.

8. Repeat procedure in the other direction for the other relief valve.


Setting the pressure reducer:

1. Install a pressure gauge on the P3 port of the control valve assembly.

2. Close jaws and hold full pressure to close.

3. Measure the pressure at the P3 gauge.

4. Release pressure; if measured pressure is not 3000 PSI, adjust reducer and repeat procedure until 3000 PSI is achieved.
## TROUBLE-SHOOTING GUIDE

### SHEAR TROUBLE-SHOOTING

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacks power</td>
<td>Circuit not getting full pressure from excavator</td>
<td>Check hydraulic pressure at port block</td>
</tr>
<tr>
<td></td>
<td>GenFlow cartridge needs adjustment</td>
<td>Make adjustments following procedure listed in this manual</td>
</tr>
<tr>
<td></td>
<td>Shear cylinder or swivel bypass</td>
<td>Check for bypass and replace seals if needed</td>
</tr>
<tr>
<td>Poor cutting</td>
<td>Material size is beyond shear appetite range</td>
<td>Consult the factory</td>
</tr>
<tr>
<td></td>
<td>Worn blades</td>
<td>Refer to Jaw and Blade Maintenance in this manual</td>
</tr>
<tr>
<td></td>
<td>Excess blade gap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excess back pressure on return side of cylinder</td>
<td>Check excavator main control valve</td>
</tr>
<tr>
<td>Poor piercing</td>
<td>Excessive wear at piercing tip and/or razor blade</td>
<td>Refer to Jaw and Blade Maintenance in this manual</td>
</tr>
<tr>
<td>Slow jaw cycle time</td>
<td>Genflow cartridge needs adjustment</td>
<td>Make adjustments following procedure listed in this manual</td>
</tr>
<tr>
<td>Material jamming</td>
<td>Excess blade gap</td>
<td>Refer to Jaw and Blade Maintenance in this manual</td>
</tr>
<tr>
<td></td>
<td>Worn blades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Excess gap between wear plate and guide blade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worn piercing tip</td>
<td></td>
</tr>
<tr>
<td>Slow jaw cycle in one direction</td>
<td>Excess back pressure on return side of cylinder</td>
<td>Check excavator main control valve</td>
</tr>
<tr>
<td>Jaw drifts closed or can be pushed closed</td>
<td>Excavator control valve</td>
<td>Check excavator main control valve</td>
</tr>
<tr>
<td></td>
<td>Processor cylinder or swivel bypass</td>
<td>Check for bypass and replace seals if needed</td>
</tr>
</tbody>
</table>
# TROUBLE-SHOOTING GUIDE

## ROTATOR TROUBLE-SHOOTING

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Possible Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not rotate</td>
<td>Blown fuse</td>
<td>Replace fuse</td>
</tr>
<tr>
<td></td>
<td>Electrical problem</td>
<td>Test for 24V at plugs on directional valve while depressing footswitch</td>
</tr>
<tr>
<td></td>
<td>Incorrect pressure settings</td>
<td>Set pressures</td>
</tr>
<tr>
<td></td>
<td>Faulty components</td>
<td>Contact Genesis to replace valve</td>
</tr>
<tr>
<td>Does not rotate in one direction</td>
<td>No electrical power to one side</td>
<td>Test for 24V at plugs on directional valve while depressing footswitch</td>
</tr>
<tr>
<td></td>
<td>Faulty directional control valve</td>
<td>Check if directional control valve shifts both ways while actuating footswitch in both directions</td>
</tr>
<tr>
<td></td>
<td>Faulty cartridge</td>
<td>Contact Genesis to replace valve</td>
</tr>
<tr>
<td>Rotator chatters</td>
<td>Electrical short</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pressure settings too high</td>
<td>Set pressures</td>
</tr>
<tr>
<td></td>
<td>Power to both rotation solenoids at the same time</td>
<td>Test for 24V at plugs on directional valve while depressing footswitch</td>
</tr>
<tr>
<td>Rotates faster in one direction</td>
<td>One flow control cartridge set higher than the other</td>
<td>Set flow control</td>
</tr>
<tr>
<td>Rotates too fast or too slow</td>
<td>Flow control out of adjustment</td>
<td>Set flow control</td>
</tr>
<tr>
<td>Rotation speed changed from original setting</td>
<td>Jam nut loosened on rotation valve</td>
<td>Check jam nuts on rotation valve; set pressures</td>
</tr>
<tr>
<td></td>
<td>Faulty cartridge (contamination)</td>
<td>Replace cartridge</td>
</tr>
<tr>
<td></td>
<td>Faulty directional control valve</td>
<td>Replace valve</td>
</tr>
<tr>
<td></td>
<td>Pressure set too low</td>
<td>Set pressures</td>
</tr>
</tbody>
</table>
MISCELLANEOUS

PARTS ORDER POLICY AND PROCEDURE

Order Placement

Parts orders must include the following:

- 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

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

Part numbers are listed in the parts section of this manual. Contact the Genesis Parts Department with questions regarding part numbers, availability and pricing.

Parts Policy

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.

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

Unused Genesis parts may be returned with proper documentation. Return shipping is the responsibility of the purchasing party. Credit will be issued upon return, less a 15% restocking fee. Parts more than three years old, obsolete and custom parts may not be returned. Documentation is required for credit of returned parts. Contact the Genesis Parts Department for a return goods authorization number and form.
PARTS ORDER FORM

Date: _____________________________

Customer: _________________________  Contact: _____________________________

Phone: _____________________________  Fax: ________________________________

Shipping Address: ___________________  Billing Address: _______________________

__________________________________________  ____________________________

__________________________________________  ____________________________

Purchase Order: _____________________  Shipping Method: _____________________

Model: _______________________________  Serial Number: _____________________

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Part Number</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Fax to the Genesis Parts Department at 715-395-3411
For assistance, call 715-395-5252 or e-mail psimon@paladinbrands.com
MISCELLANEOUS

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.

The Genesis Service Department will assign a warranty work authorization (WWA) number to track the repair costs and/or a customer service action (CSA) number to track outgoing parts. When defective parts must be returned to the factory, a returned goods authorization (RGA) number will be used in place of the CSA number.

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 WWA number on all invoices.

Genesis pays the standard labor rate and does not cover mileage.

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

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

Please direct any questions to the Genesis Service Department.
The following is a list of tools available for purchase from Genesis. This list may not include every tool used for this attachment, such as those that would also commonly be used for maintaining an excavator.

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