GlobalMAX® Maintenance

GlobalMAX System
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October 2018  
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## Required Tools

<table>
<thead>
<tr>
<th>Icon</th>
<th>Tool</th>
<th>Size(s)</th>
</tr>
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<tbody>
<tr>
<td><img src="image" alt="Air nozzle" /></td>
<td>Air nozzle</td>
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<tr>
<td><img src="image" alt="Plastic pipe sealant" /></td>
<td>Plastic pipe sealant</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Socket wrench" /></td>
<td>Socket wrench</td>
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<tr>
<td><img src="image" alt="Socket" /></td>
<td>Socket</td>
<td>13 mm</td>
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<tr>
<td><img src="image" alt="Anti-seize" /></td>
<td>Anti-seize</td>
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</tr>
<tr>
<td><img src="image" alt="Screwdriver, flat" /></td>
<td>Screwdriver, flat</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Jet-Lube Temp-Guard P/N 204248" /></td>
<td>Jet-Lube Temp-Guard P/N 204248</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Allen wrench" /></td>
<td>Allen wrench</td>
<td>3 mm, 4 mm</td>
</tr>
<tr>
<td><img src="image" alt="Open end wrench (2)" /></td>
<td>Open end wrench (2)</td>
<td>3/4 in.</td>
</tr>
</tbody>
</table>
Overview

This section describes the maintenance required for the GlobalMAX equipment. Always service the equipment at regular maintenance intervals (see Maintenance Schedule). It is important to continually inspect components for wear and/or damage, and to immediately replace them as required.

**WARNING**

All electrical and maintenance work described in this guide should be undertaken only by qualified service personnel. Always follow the safety instructions presented in the Safety section.
# Maintenance Schedule

The following maintenance activities and schedules are provided to aid in the development of a successful equipment maintenance program. Reference documents and videos provide instructions for performing the specific task. After any maintenance procedure, perform a post maintenance flush (see Operations and Maintenance - Flushing the GlobalMAX Machine).

<table>
<thead>
<tr>
<th>Task</th>
<th>Frequency</th>
<th>Reference Document</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pump Power-end Maintenance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change crankcase oil, check belt tension</td>
<td>After first 50 hrs of operation</td>
<td>401073 OMAX, EnduroMAX, MAXIEM Change Pump Crankcase Oil.</td>
</tr>
<tr>
<td></td>
<td>Every 300 hrs after first oil change</td>
<td>401083 Maintenance, Pump Belt EnduroMAX, MAXIEM</td>
</tr>
<tr>
<td>Lubricate electric motor bearings</td>
<td>Every 6 months for continuous high ambient temperature; dirty or moist locations; high vibrations</td>
<td>401075 Maintenance, Lube Pump Electric Motor Bearings</td>
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<tr>
<td></td>
<td>Seasonally (each year) if idle 6 months or more</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annually if continuous operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Every 3 years if run 5,000 hrs per year</td>
<td></td>
</tr>
<tr>
<td>Inspect and adjust tension or replace belt</td>
<td>Periodically inspect, adjust tension, and replace as needed</td>
<td>401083 Maintenance, Pump Belt EnduroMAX, MAXIEM</td>
</tr>
<tr>
<td><strong>Pump Water Filtration</strong></td>
<td></td>
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</tr>
<tr>
<td>Change pump prefILTER and final filter</td>
<td>Whenever the difference in the pressure between the inlet and outlet filter gauges is equal to, or greater than 20 psi</td>
<td>401074 Maintenance, Change Pump Water Filter</td>
</tr>
<tr>
<td><strong>Wet End Maintenance</strong></td>
<td></td>
<td></td>
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<tr>
<td>Pump rebuild</td>
<td>M20, M30 - rebuild every 500 hours, alternate minor/major rebuild kits</td>
<td>401076 Maintenance, Pump Wet End Rebuild, OMAX/MAXIEM</td>
</tr>
<tr>
<td>Install overhaul kit</td>
<td>2,000 hours</td>
<td></td>
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<tr>
<td>Replace plunger assemblies</td>
<td>2,000 hours or if plungers are &quot;rubbed&quot; or damaged</td>
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</tr>
<tr>
<td>Replace liquid displacers</td>
<td>2,500 hours or when lip diameter is out of specification</td>
<td></td>
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<tr>
<td>Replace cylinders</td>
<td>M20, M30 - 4,000 hours</td>
<td></td>
</tr>
<tr>
<td>Replace manifold</td>
<td>M20, M30 - 5,000 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Other Pump Maintenance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebuild safety valve</td>
<td>When leaking occurs, replace if safety valve continues to leak after rebuild</td>
<td>400995 Rebuild OMAX Safety Valve</td>
</tr>
<tr>
<td>Task</td>
<td>Frequency</td>
<td>Reference Document</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td><strong>High-Pressure Plumbing System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebuild or replace swivel</td>
<td>Rebuild if any leaks; replace if leaking continues after rebuild or if damaged</td>
<td>400697 Rebuilding the Dual Port Swivel</td>
</tr>
<tr>
<td>High-pressure lines and fittings</td>
<td>Replace if damaged or if continued leaking occurs; do not try to repair</td>
<td>401081 1/4 in. High Pressure Fittings OMAX</td>
</tr>
<tr>
<td><strong>PC Controller</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean keyboard and mouse</td>
<td>As needed</td>
<td>Per PC manufacturer instructions</td>
</tr>
<tr>
<td>Clean monitor screen</td>
<td>As needed for sharp viewing.</td>
<td>Per PC manufacturer instructions</td>
</tr>
<tr>
<td>Reboot PC controller</td>
<td>Daily</td>
<td>Per PC manufacturer instructions</td>
</tr>
<tr>
<td>Update OMAX software</td>
<td>When updates are released by OMAX</td>
<td>Download from the Dashboard</td>
</tr>
<tr>
<td>Other as specified in the PC User's Manual (provided by manufacturer)</td>
<td>PC manufacturer recommended</td>
<td>Per PC manufacturer instructions</td>
</tr>
<tr>
<td><strong>Tank</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wash away abrasive accumulation from equipment working area</td>
<td>Daily and as often as required to maintain a clean working environment</td>
<td>401442 Maintenance GlobalMAX System</td>
</tr>
<tr>
<td>Remove all garnet, sludge, and slugs from the tank bottom</td>
<td>Whenever abrasive particles begin to excessively accumulate on the material being machined</td>
<td></td>
</tr>
<tr>
<td>Inspect slat grates</td>
<td>Rotate monthly or more frequently if needed; replace when excessively scored and no longer stable or level</td>
<td></td>
</tr>
<tr>
<td>Clean the drain screen</td>
<td>Daily or more frequently if needed</td>
<td>OMAX online support, eLearning, MAXIEM Maintenance Training, Tank Maintenance</td>
</tr>
<tr>
<td><strong>Table</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubricate the Z-axis lead screw</td>
<td>Yearly, or as needed to maintain smooth operation</td>
<td>401442 Maintenance, GlobalMAX System</td>
</tr>
<tr>
<td>Wipe down X and Y rails</td>
<td>Weekly, or as needed to maintain uninterrupted operation</td>
<td></td>
</tr>
<tr>
<td>Wipe down X and Y belts</td>
<td>Weekly, or as needed</td>
<td></td>
</tr>
<tr>
<td>Adjust X and Y-bridge belt tension</td>
<td>As needed</td>
<td></td>
</tr>
<tr>
<td>Clean nozzle orifice</td>
<td>Clean the jewel/nozzle orifice assembly once a</td>
<td>401458 GlobalJET Nozzle</td>
</tr>
<tr>
<td>Task</td>
<td>Frequency</td>
<td>Reference Document</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Abrasive tubing (hopper to nozzle)</td>
<td>week minimum to prevent mineral buildup in the jewel assembly</td>
<td>Installation and Maintenance Guide</td>
</tr>
<tr>
<td>Rotate/replace nozzle mixing tube</td>
<td>Inspect daily or weekly (depending on how many hours you cut each day), replace as needed</td>
<td>401442 Maintenance, GlobalMAX System</td>
</tr>
<tr>
<td>Clean the inlet body filter screen</td>
<td>Clean if dirty or clogged</td>
<td>401459 Installation and Maintenance, Inlet Body Extension, GlobalMAX</td>
</tr>
<tr>
<td>Rebuild the nozzle inlet body</td>
<td>Replace applicable components (e.g. poppet) if water drips from the weep hole</td>
<td>401458 GlobalJET Nozzle Installation and Maintenance Guide</td>
</tr>
</tbody>
</table>

**NOTE**

*The hours listed in this checklist for recommended maintenance scheduling are NOT warranty hours.*

**NOTE**

*Repeat the time durations shown for the specific pump model after every rebuild kit.*
**Pump Maintenance**
See 401427 Operation, GlobalMAX Pump.

**Table Maintenance**
**Lubricate the Z-axis**
See 401442 Maintenance GlobalMAX System.

**Flush Machine After Maintence**
See 401442 Maintenance GlobalMAX System.

**Nozzle Care and Maintenance**
See 401458 Installation and Maintenance GlobalJET Nozzle.

![Figure 1](image-url)
Clean the Drain Screen

1. Lift the *drain pipe* so it is above the *catcher tank* water level.

   ![Figure 2](image2)

2. Unscrew the *drain screen* from the *drain pipe*.

   ![Figure 3](image3)

3. Use compressed air or a soft nylon brush to clean sludge buildup off the *drain screen*.

   ![Figure 4](image4)
4. Clean the threads on the **drain pipe** and apply plastic pipe sealant.

![Figure 5](image)

5. Thread the cleaned **drain screen** onto the **drain pipe**.

![Figure 6](image)

6. Lower the **drain pipe** to the desired water level.
Inspect and Rotate Slat Grates

1. Identify the slat grates that have experienced the most wear.

![Figure 7](image)

2. Identify the slat grates with little or no wear.

3. If a slat grate’s wear is mostly on one end, rotate the slat grate end to end (Figure 8) and (Figure 9).

![Figure 8](image)

![Figure 9](image)

4. If the slat grate is worn in the center or at both ends, swap with a slat grate with little or no wear.

5. See Clean and Inspect Catcher Tank for procedures for removing slat grates.
Clean and Inspect Catcher Tank

Used garnet and cutting waste collect in the bottom of the catcher tank. The catcher tank must be cleaned when the level of the used garnet and cut material causes excessive debris to collect on the surface of the material being cut.

**NOTICE**

Allowing excessive garnet to accumulate in the catcher tank increases the possibility of piercing the bottom of the tank.

Drain Water from Catcher Tank

**NOTE**

Water can be siphoned from the catcher tank using one or more hoses. However, to quickly remove water the use of an electric pump is recommended.

1. Place the pump or siphon hose in the area where most cutting operations occur or where flushing and nozzle testing is done.

**NOTE**

The level of sludge will be lower in this area and the pump will be able to remove the most water.

2. Start the water draining process and proceed with the next steps.

Remove Foam Dams

**NOTE**

Foam dams are removed from the controller end and drain end where foam directly touches the slat grates.

1. Remove the foam dam sections from the controller end [1] and the drain end [2] of the table(Figure 10) and (Figure 11).
2. Place the removed foam dam sections on the slat grates to let the water drain.

**Remove the Slat Grate Clamps**

1. Reach under a slat grate clamp bolt to keep it from falling into the catcher tank.
2. Remove the nut and washers from the bolt.

4. Place the flat washer [1], lock washer [2], and nut [3] on the bolt and save for use during re-installation of the slat grate clamps.

5. Repeat this process for all the slat grate clamp bolts.
6. Squeeze water from the foam dam sections sitting on the slat grates and place them in a safe location.
7. Lift the slat grate clamps off the table and store in a safe location.

Remove the Slat Grates

**NOTE**
Start at either end of the table where the Y-axis bridge and any drain hoses are not in the way.

1. Raise the Z-Axis to easily clear the slat grates.
2. Carefully lift the slat grate section to avoid damaging the frame beam covers and place it in a safe location.

**CAUTION**
Sharp edges may be present, especially around worn areas of the slat grates. Use heavy-duty gloves when handling slat grates to avoid cuts and abrasion.

3. Lift the next slat grate section out and place it in a safe location.
4. As needed, move the Y-axis bridge out of the way.
5. When needed, move drain hose(s) out of the way.
6. Remove remaining slat grate sections.
7. Replace drain hose and continue until the water is drained.
Clean and Inspect the Catcher Tank Plating and Floor

1. Protect the rail covers with a heavy tarp, cardboard, or other suitable material.
2. Remove the sludge from the bottom of the catcher tank.

   NOTE
   *Options include using a professional cleaning contractors or sludge removal using small shovels.*

3. Inspect armor plating on the bottom of the catcher tank and replace as necessary.
4. Inspect any area of the catcher tank floor not covered by armor plating.
   a. If areas are worn, determine the extent of the damage.
   b. Repair the catcher tank floor or place additional armor plating as needed.
Place Slat Grate

1. Move the Y-bridge to the middle of the table.
2. Place the first slat grate flush with the end of the grate supports [1] at the controller wall (Figure 15) and (Figure 16).

3. Move the Y-bridge to the controller wall, over the newly installed slat grate.
4. Place the subsequent slat grates next to each other with no gaps \([1]\) in between (Figure 17) and (Figure 18).

![Figure 17](image)

![Figure 18](image)

**Clamp Slat Grates in Place**

**NOTE**

*Grate clamping plates are used to hold the slat grates firmly in place. Two of the grate clamping plates are slightly longer.*

1. Place the longer grate clamping plates near the controller wall on the X-front and X-rear sides of the machine.

![Figure 19](image)
NOTE
The two longer grate clamping plates have uneven bolt hole spacing where A is longer than B.

Figure 20

2. Place the long grate clamping plates so the longer section beyond the end bolt hole (A) is towards the controller wall.

NOTE
The grate clamping plate extends past the edge of the slat grate.

Figure 21
3. Place the remaining **grate clamping plates** along the **X-front wall** and **X-rear wall**.

**NOTE**

*All grate clamping plates must have the spacer tabs [1] against the side of the grate support.*

![Figure 22](image)

4. Lay the grate clamping plate bolts along the **X-front wall** and **X-rear wall**.

![Figure 23](image)

5. Remove the nut, lock washer, and fender washer from the bolts. Leave the small flat washer in place.

![Figure 24](image)
6. Apply a heavy coat of anti-seize to the threads of all bolts.

7. Reach through the slat grates [3] below the grate support [1] and insert the bolts up through the grate support and through the corresponding holes in the grate clamping plates [2].

8. While holding the bolt in place, install a fender washer [1], lock washer [2], and nut [3] onto the bolt finger tight (Figure 26) and (Figure 27).
9. When all bolts and nuts are installed make sure the bolts are perpendicular to the **grate clamping plates**.

**NOTE**

Some locations on the grate supports have extra holes that do not correspond to a hole in the grate clamping plates. Verify the bolts are in corresponding holes or they will never line up vertically.

10. Slide the **grate clamping plates** [1] as needed to align the ends of the **grate clamping plates** with the ends where **two slat grates meet** [3] (Figure 29).
11. When tightening the nuts [2], make sure the grate clamping plates are tight against the side of the grate supports.

**NOTE**

The grate clamping plates can be bent during installation. Do not over tighten the clamping plate bolts.

**NOTE**

Verify the bolts are straight and the index tabs are tight against the side of the grate supports.
Place Foam Dams

Foam dams are placed between the slat grates and the catcher tank walls to prevent water from splashing onto the floor. The number of foam dam sections vary with the size of the table.

Figure 31

NOTE

Foam dam sections are cut to fit securely between the back of the slat grate supports and catcher tank wall on the front and rear of the table [1] and between the sides of the slat grates and catcher tank on the sides of the table [2].

Figure 32
**Controller Side**

**NOTE**

*The foam dam on the controller end extends from the X-front catcher tank wall to the X-rear [1].*

![Figure 33](image1)

1. The **foam dam** sections go under the **slat grate clamps** until the ends touch the **catcher tank** walls.

![Figure 34](image2)

2. Place additional **foam dam** sections to **fully cover the gap [1]** between the **slat grate** and **catcher tank** wall.

![Figure 35](image3)
3. Push the **foam dam** down level with the edge of the **slat grate**.

![Figure 36](image)

**Drain Side**

1. Tuck the X-rear section of the **foam dam** under the **cooling line bracket** [1] and **hoses**.

![Figure 37](image)

2. Install **foam dam** sections needed to reach the **drain pipe**.

![Figure 38](image)
3. Place the short foam dam section between the drain pipe and the X-front catcher tank wall.

Figure 39

4. Verify that the ends of the foam dam fit solidly against neighboring foam dams and are below the top of the catcher tank.

Figure 40

5. Verify there are no gaps in the foam dam anywhere around the catcher tank.

Figure 41
Lubricate the Z-Axis Lead Screw

1. Raise the Z-axis to the top of its range.
2. Shut OFF electrical power to the table.
3. Clean the bellows of all abrasive, dust, and other debris.

4. Loosen the band clamp from the bottom of the upper bellows.

5. Raise the bellows and squeeze the grease boot [1] to force new grease onto the lead screw.
Refilling the Grease Boot

a. Pinch the top of the grease boot to open a gap.

b. Inject Jet Lube Temp Guard grease into the grease boot until full.

c. Release the grease boot.

6. Lower the bellows over the bellows adapter.
7. Position the **band clamp** over the **bellows adapter** and tighten to secure the **bellows**.

![Image of band clamp and bellows adapter](image)

Figure 48

8. Switch **ON** electric power to the **table**.

![Image of electric power switch](image)

Figure 49

9. Run the **Z-axis** through its full range two times.
Clean the X-Axis and Y-Axis Drive Belts

The X-axis and Y-axis drive belts should be wiped down and inspected regularly.

1. Use dry, clean cloth to wipe the smooth side of the drive belts.
2. Move the X-axis and Y-axis to uncover hidden drive belt sections.
3. Clean these areas of the drive belts.
4. Inspect the drive belts for cuts and obvious wear.
5. Replace the drive belts when part quality it affected.

Clean the X-Axis and Y-Axis Rails

Wipe down X and Y-bridge rails as needed to maintain uninterrupted operation. Debris on the X-axis or Y-axis rails can cause defects in parts.

1. Move the X-axis and Y-axis [3] to one end of their travel range (Figure 50).
2. Use a damp clean cloth with water only to wipe the length of the open Y-axis rails [1] top and bottom.
3. Use a damp clean cloth with water only to wipe the length of the open X-axis rails [2] x-front and rear.

**NOTICE**

Do not spray water directly onto the rails as the liquid may get in the drive belt teeth and attract dust and other particles.

Figure 50
4. Inspect all rail sweeps [1] and clear any trapped debris. Adjust the gap if necessary.

**NOTE**

*The ideal gap is between 0.004 in.–0.010 in. (0.10 mm–0.25 mm).*

![Figure 51]

a. To adjust the rail wiper gap, loosen the Y-axis rail wiper.

![Figure 52]

b. Slide a piece of writing paper under the **Y-axis rail wiper**.

c. Lower the **Y-axis rail wiper** to contact the paper, but not tight enough to trap it.

d. Tighten the screws to hold the **Y-axis rail wiper** in place.
e. Remove the paper.
f. Repeat steps 1-5 for the remaining **Y-axis rail wipers**.
g. Move the **Y-carriage** the full length of the **Y-bridge** to verify the **Y-axis rail wipers** do not rub on the **Y-axis rail**.

5. Move the **X-axis** and **Y-axis** to uncover the rest of the **rails** and wipe them clean.

6. Inspect the **rails** for any signs of damage.

**NOTE**

*Do not lubricate the rails as this will affect X and Y-axis motion.*
# Maintenance Log

<table>
<thead>
<tr>
<th>Run Hours</th>
<th>Maintenance Performed</th>
<th>Done By</th>
<th>Date</th>
</tr>
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<tbody>
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</tbody>
</table>
Flush the GlobalMAX

Flush the GlobalMAX machine after installation and after maintenance to purge debris, lubricants, air, etc. from the high-pressure lines and components prior to operating the equipment.

Prepare for Flush

1. Remove the nozzle assembly [1] (if attached).

2. Use the ball end of a small allen wrench to pull the inlet body filter screen [2] from the inlet body [1].

4. Set the **inlet body filter screen** aside for reuse.
5. Raise the **Z-axis** so the **inlet body** is 6–8 in. above the water level.
6. Move the **Y-axis carriage** so that the water will go between the **grate slats**.
7. Turn **ON** the water source.
8. Open the **charge pump inlet water valve**.
9. Open the **charge pump flush valve**.
10. Turn **ON** the **charge pump**.
11. Run flush water until it is less than 70°F (21°C).
12. Close the **charge pump flush valve** when the water reaches operating temperature.

**Flush the System**

1. Turn **ON** the **GlobalMAX pump**.
2. In **MAKE**, click the **nozzleTest** button.

![Figure 56](image)

**CAUTION**

Verify the nozzle assembly and inlet body filter screen have been removed.

3. In **Test Operations** select **Flush plumbing** and click **Next**.

![Figure 57](image)
4. Click **Start Flush**.

![Figure 58](image)

**NOTE**
*The Test Operations dialog box will automatically close after 60 seconds if no buttons are clicked.*

5. Turn the **pressure knob** up.

**NOTE**
*A timer starts counting for 30 minutes, then the pump is automatically shut off.*

![Figure 59](image)

6. Click **Close** on the **Test Operations** dialog box.

![Figure 60](image)
Prepare for Operation

When the machine flush is complete, perform the following tasks.

1. Turn the **GlobalMAX pump** rpm down to the minimum.
2. Place an **inlet body filter screen** [1] in the **nozzle inlet body** [2].

![Figure 61]

3. Install the **nozzle**. See 401458A-EN Installation and Maintenance, GlobalJET Nozzle.

![Figure 62]

4. Perform the **nozzle** test and adjust **GlobalMAX pump** rpm for operation. See 401435 GlobalMAX Abrasive Waterjet Operation Guide.
5. Verify the water jet appears well defined and symmetrical.

6. After the nozzle test is finished, install the nozzle splash guard.

**NOTE**

*The machine is now ready for operation.*
Customer Support

Refer to the omax.com/support website for technical documents and distributor support.