

# GlobalMAX® Maintenance

## GlobalMAX System



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401442A-EN

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# Contents

Required Tools.....	4
Overview.....	5
Maintenance Schedule.....	6
Pump Maintenance.....	9
Table Maintenance.....	9
Lubricate the Z-axis.....	9
Flush Machine After Maintenance.....	9
Nozzle Care and Maintenance.....	9
Clean the Drain Screen.....	10
Inspect and Rotate Slat Grates.....	12
Clean and Inspect Catcher Tank.....	13
Drain Water from Catcher Tank.....	13
Remove Foam Dams.....	13
Remove the Slat Grate Clamps.....	14
Remove the Slat Grates.....	15
Clean and Inspect the Catcher Tank Plating and Floor.....	16
Place Slat Grate.....	17
Clamp Slat Grates in Place.....	18
Place Foam Dams.....	24
Controller Side.....	25
Drain Side.....	26
Lubricate the Z-Axis Lead Screw.....	28
Refilling the Grease Boot.....	29
Clean the X-Axis and Y-Axis Drive Belts.....	31
Clean the X-Axis and Y-Axis Rails.....	31
Maintenance Log.....	34
Flush the GlobalMAX.....	35
Prepare for Flush.....	35
Flush the System.....	36
Prepare for Operation.....	38
Customer Support.....	40

# Required Tools

Icon	Tool	Size(s)
	Air nozzle	
	Plastic pipe sealant	
	Socket wrench	
	Socket	13 mm
	Anti-seize	
	Screwdriver, flat	
	Jet-Lube Temp-Guard P/N 204248	
	Allen wrench	3 mm, 4 mm
	Open end wrench (2)	3/4 in.

# 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).

Task	Frequency	Reference Document
<b>Pump Power-end Maintenance</b>		
Change crankcase oil, check belt tension	After first 50 hrs of operation	401073 OMAX, EnduroMAX, MAXIEM Change Pump Crankcase Oil. 401083 Maintenance, Pump Belt EnduroMAX, MAXIEM
	Every 300 hrs after first oil change	
Lubricate electric motor bearings	Every 6 months for continuous high ambient temperature; dirty or moist locations; high vibrations	401075 Maintenance, Lube Pump Electric Motor Bearings
	Seasonally (each year) if idle 6 months or more	
	Annually if continuous operation	
	Every 3 years if run 5,000 hrs per year	
Inspect and adjust tension or replace belt	Periodically inspect, adjust tension, and replace as needed	401083 Maintenance, Pump Belt EnduroMAX, MAXIEM
<b>Pump Water Filtration</b>		
Change pump prefilter and final filter	Whenever the difference in the pressure between the inlet and outlet filter gauges is equal to, or greater than 20 psi	401074 Maintenance, Change Pump Water Filter
<b>Wet End Maintenance</b>		
Pump rebuild	M20, M30 -rebuild every 500 hours, alternate minor/major rebuild kits	401076 Maintenance, Pump Wet End Rebuild, OMAX/MAXIEM
Install overhaul kit	2,000 hours	
Replace plunger assemblies	2,000 hours or if plungers are "rubbed" or damaged	
Replace liquid displacers	2,500 hours or when lip diameter is out of specification	
Replace cylinders	M20, M30 - 4,000 hours	
Replace manifold	M20, M30 - 5,000 hours	
<b>Other Pump Maintenance</b>		
Rebuild safety valve	When leaking occurs, replace if safety valve continues to leak after rebuild	400995 Rebuild OMAX Safety Valve

Task	Frequency	Reference Document
<b>High-Pressure Plumbing System</b>		
Rebuild or replace swivel	Rebuild if any leaks; replace if leaking continues after rebuild or if damaged	400697 Rebuilding the Dual Port Swivel
High-pressure lines and fittings	Replace if damaged or if continued leaking occurs; do not try to repair	401081 1/4 in. High Pressure Fittings OMAX
<b>PC Controller</b>		
Clean keyboard and mouse	As needed	Per PC manufacturer instructions
Clean monitor screen	As needed for sharp viewing.	Per PC manufacturer instructions
Reboot PC controller	Daily	Per PC manufacturer instructions
Update OMAX software	When updates are released by OMAX	Download from the Dashboard
Other as specified in the PC User's Manual (provided by manufacturer)	PC manufacturer recommended	Per PC manufacturer instructions
<b>Tank</b>		
Wash away abrasive accumulation from equipment working area	Daily and as often as required to maintain a clean working environment	401442 Maintenance GlobalMAX System
Remove all garnet, sludge, and slugs from the tank bottom	Whenever abrasive particles begin to excessively accumulate on the material being machined	
Inspect slat grates	Rotate monthly or more frequently if needed; replace when excessively scored and no longer stable or level	
Clean the drain screen	Daily or more frequently if needed	OMAX online support, eLearning, MAXIEM Maintenance Training, Tank Maintenance
<b>Table</b>		
Lubricate the Z-axis lead screw	Yearly, or as needed to maintain smooth operation	401442 Maintenance, GlobalMAX System
Wipe down X and Y rails	Weekly, or as needed to maintain uninterrupted operation	
Wipe down X and Y belts	Weekly, or as needed	
Adjust X and Y-bridge belt tension	As needed	
Clean nozzle orifice	Clean the jewel/nozzle orifice assembly once a	401458 GlobalJET Nozzle

Task	Frequency	Reference Document
	week minimum to prevent mineral buildup in the jewel assembly	Installation and Maintenance Guide
Abrasive tubing (hopper to nozzle)	Inspect daily or weekly (depending on how many hours you cut each day), replace as needed	401442 Maintenance, GlobalMAX System
Rotate/replace nozzle mixing tube	Rotate 90 degrees (one quarter turn) every 8 hours of cutting to even out wear; replace as needed	401458 GlobalJET Nozzle Installation and Maintenance Guide
Clean the inlet body filter screen	Clean if dirty or clogged	401459 Installation and Maintenance, Inlet Body Extension, GlobalMAX
Rebuild the nozzle inlet body	Replace applicable components (e.g. poppet) if water drips from the weep hole	

## 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, GlobalMAXPump.

# Table Maintenance

## Lubricate the Z-axis

See 401442 Maintenance GlobalMAX System.

# Flush Machine After Maintenance

See 401442 Maintenance GlobalMAX System.

# Nozzle Care and Maintenance

See 401458 Installation and Maintenance GlobalJET Nozzle.

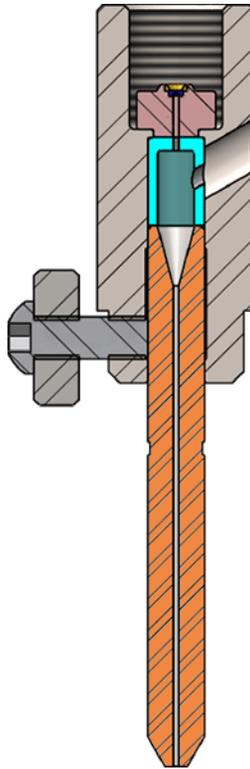


Figure 1

# Clean the Drain Screen

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



Figure 2

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



Figure 3

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



Figure 4

4. Clean the threads on the **drain pipe** and apply plastic pipe sealant.

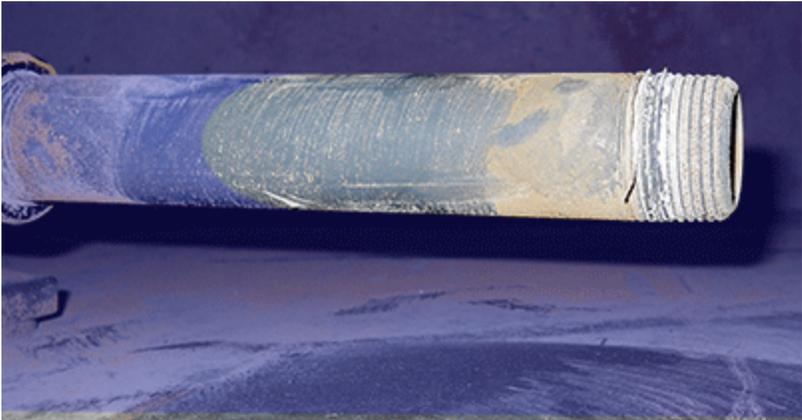


Figure 5

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



Figure 6

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.

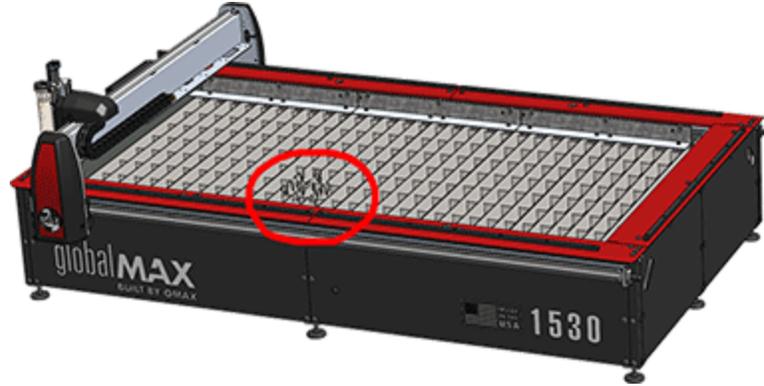


Figure 7

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).

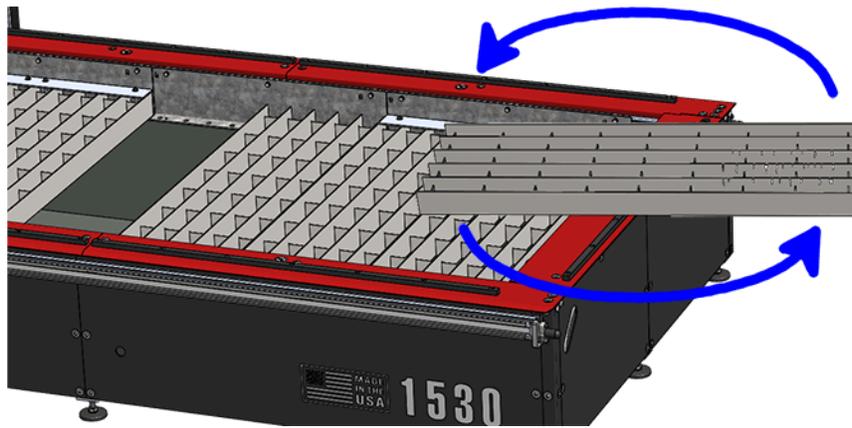


Figure 8



Figure 9

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).

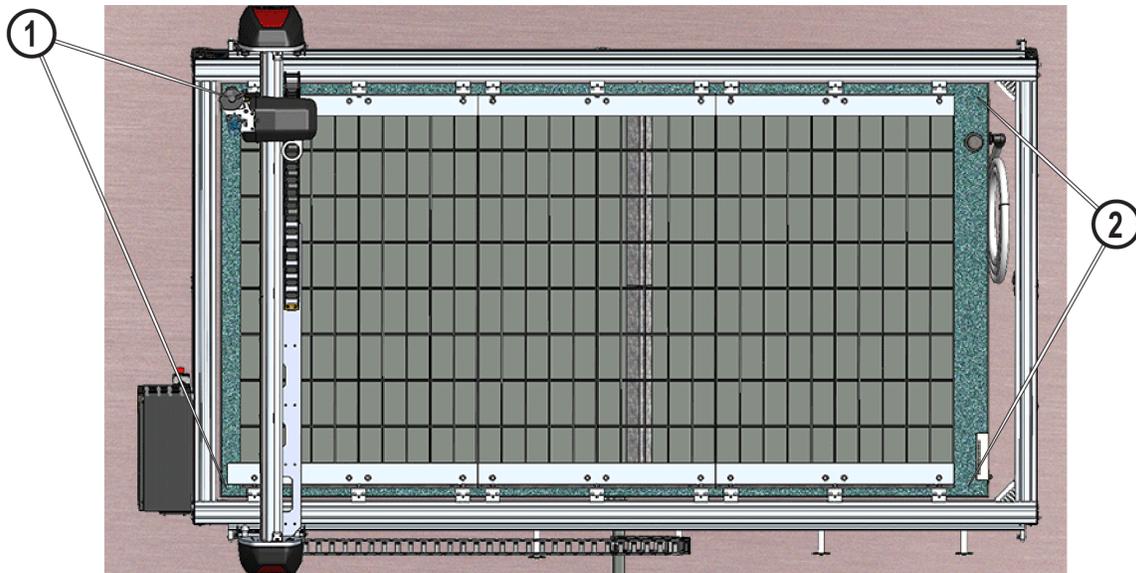


Figure 10



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.



Figure 12

3. Remove the **slat grate clamp bolt** [1] from the **slat grate clamp** [2] and **grate support** [3].



Figure 13

- 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**.



Figure 14

- Repeat this process for all the **slat grate clamp** bolts.
- Squeeze water from the **foam dam** sections sitting on the **slat grates** and place them in a safe location.
- 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.*

- Raise the **Z-Axis** to easily clear the **slat grates**.
- 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.**



- Lift the next **slat grate** section out and place it in a safe location.
- As needed, move the **Y-axis bridge** out of the way.
- When needed, move drain hose(s) out of the way.
- Remove remaining **slat grate** sections.
- 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).

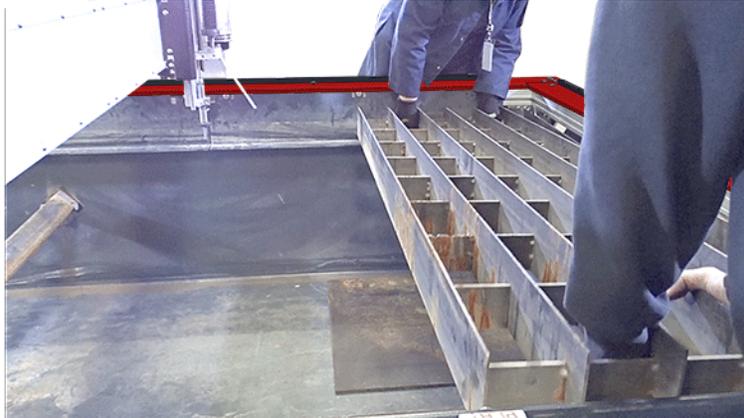


Figure 15

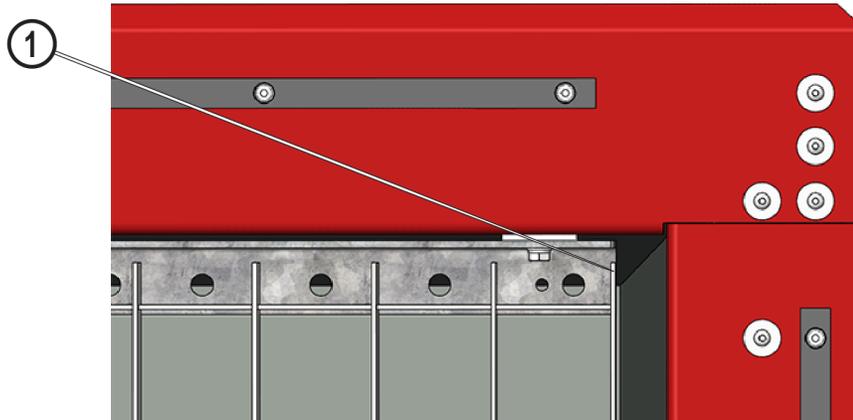


Figure 16

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).

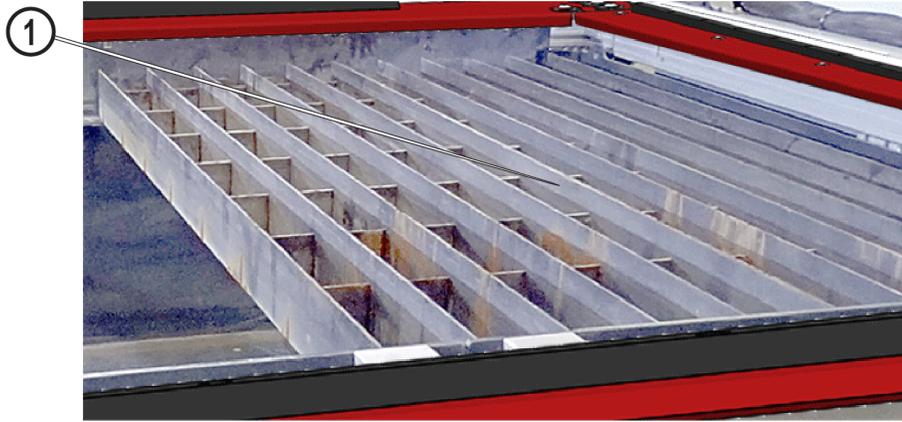


Figure 17

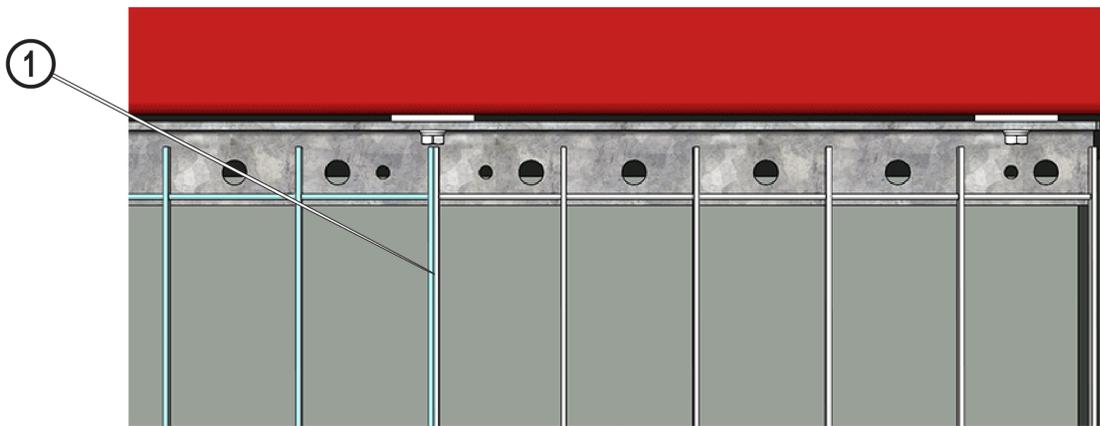


Figure 18

## 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

**NOTE**

*The two longer grate clamping plates have uneven bolt hole spacing where A is longer than B.*

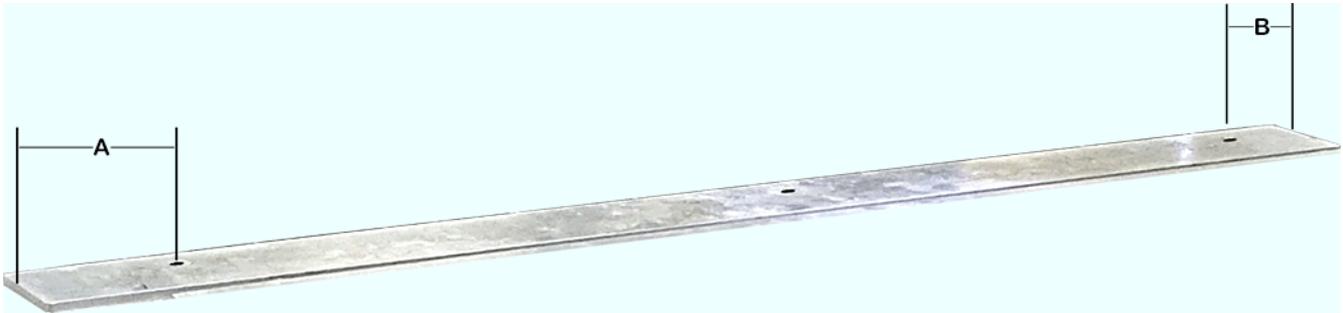


Figure 20

- 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.*

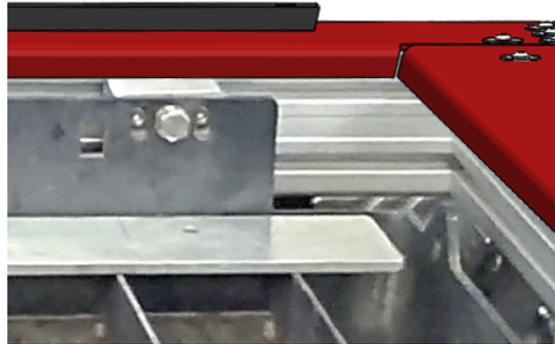


Figure 21

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.*

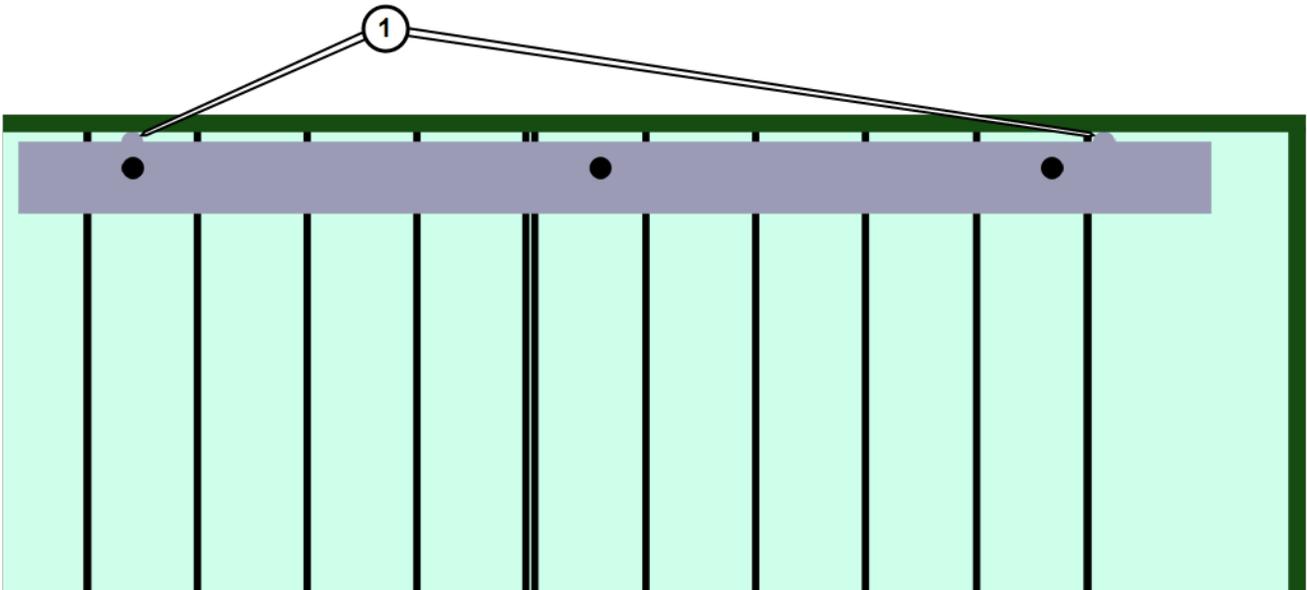


Figure 22

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

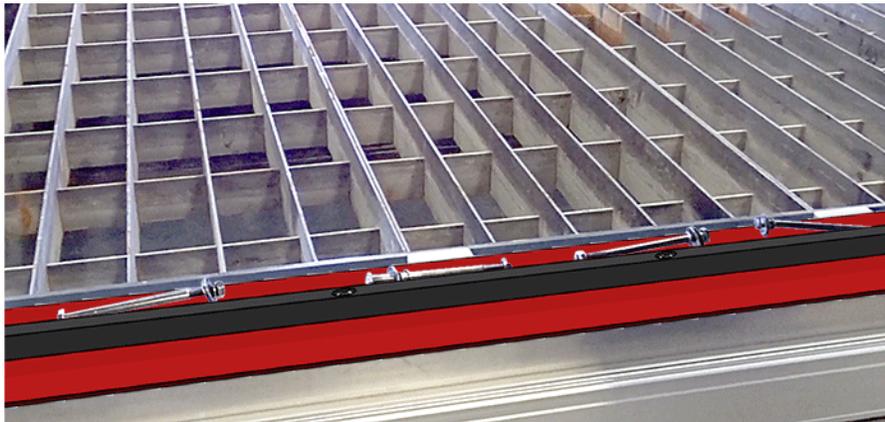


Figure 23

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



Figure 24

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].

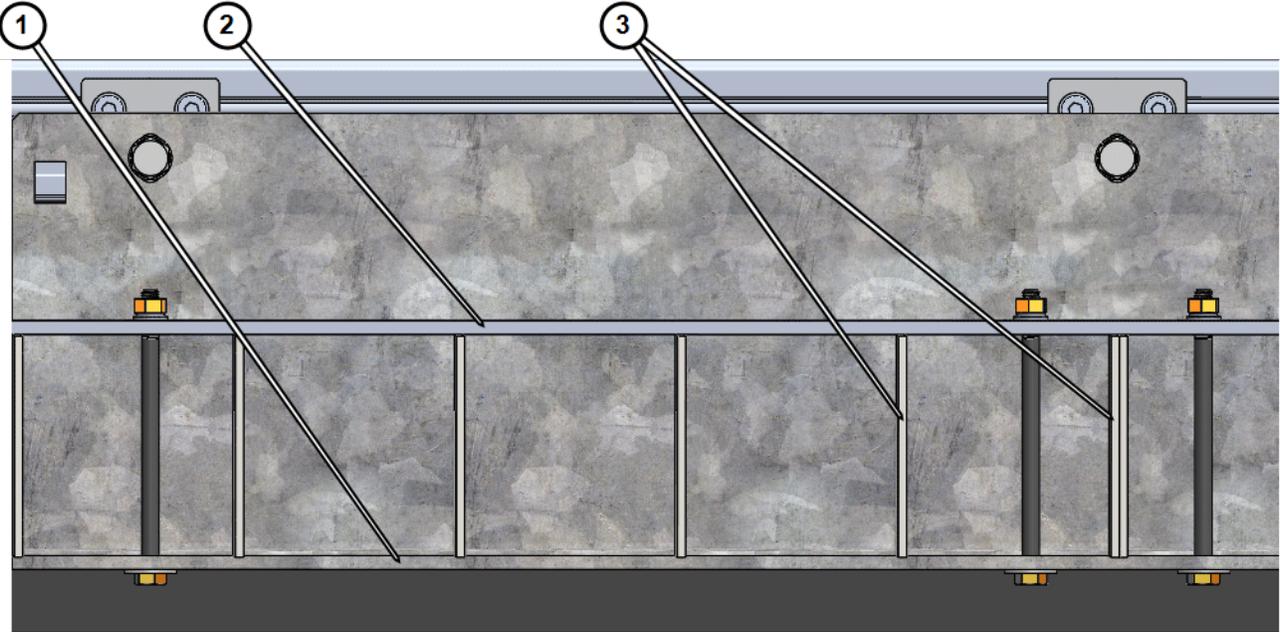


Figure 25

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).



Figure 26



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.*



Figure 28

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**.

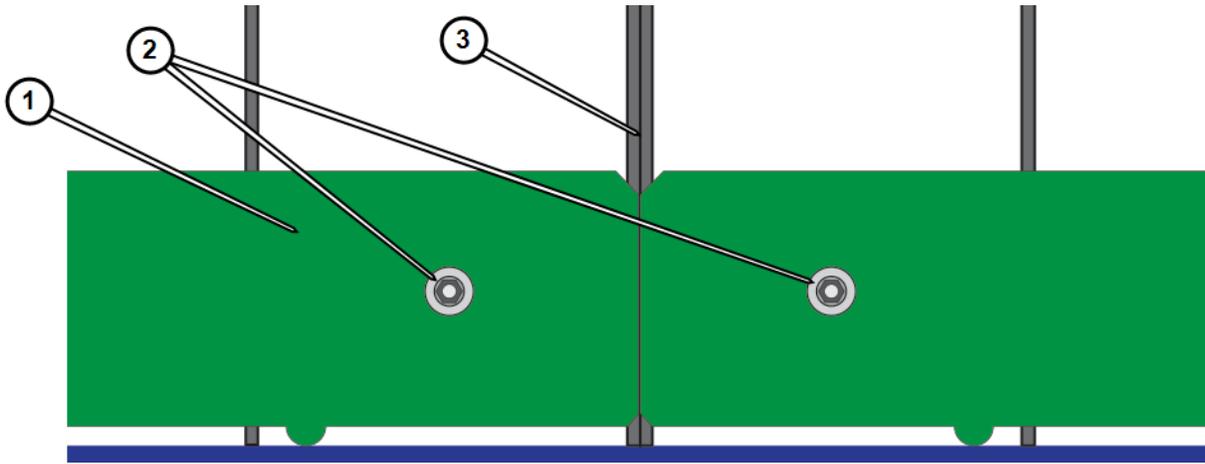


Figure 29

**NOTE**

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



Figure 30

**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 to the floor. The number of foam dam sections vary with the size of the table.

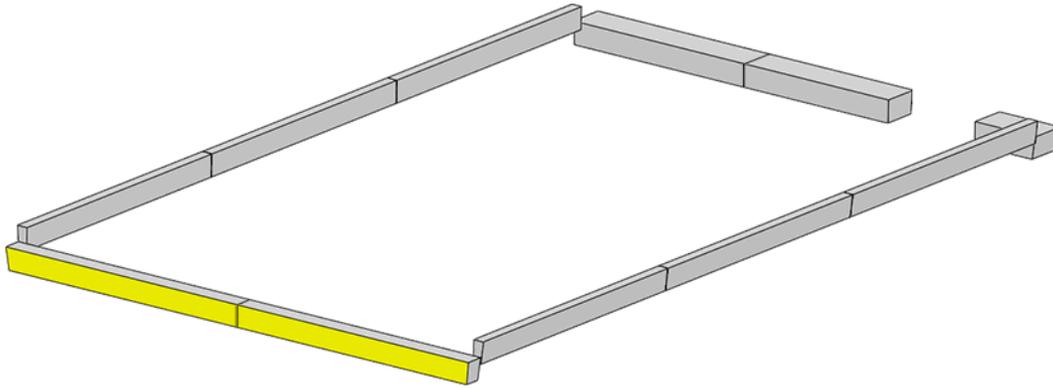


Figure 31

### 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].*

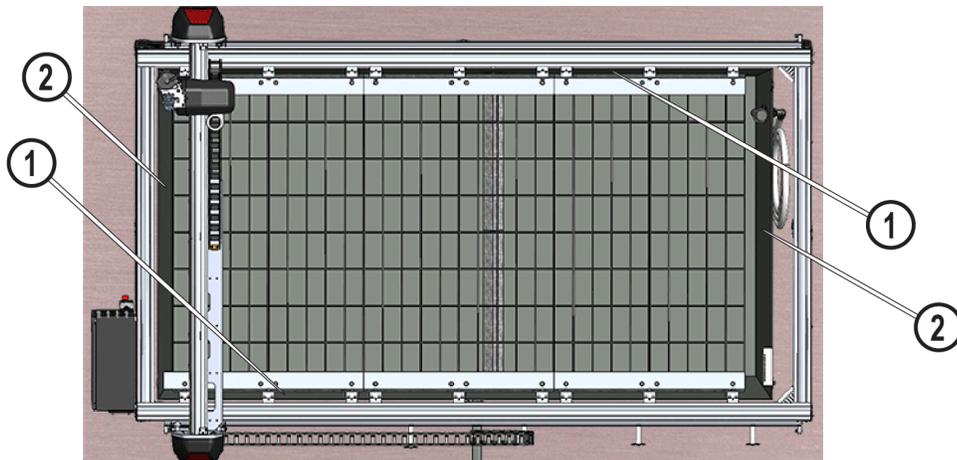


Figure 32

# Controller Side

## NOTE

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

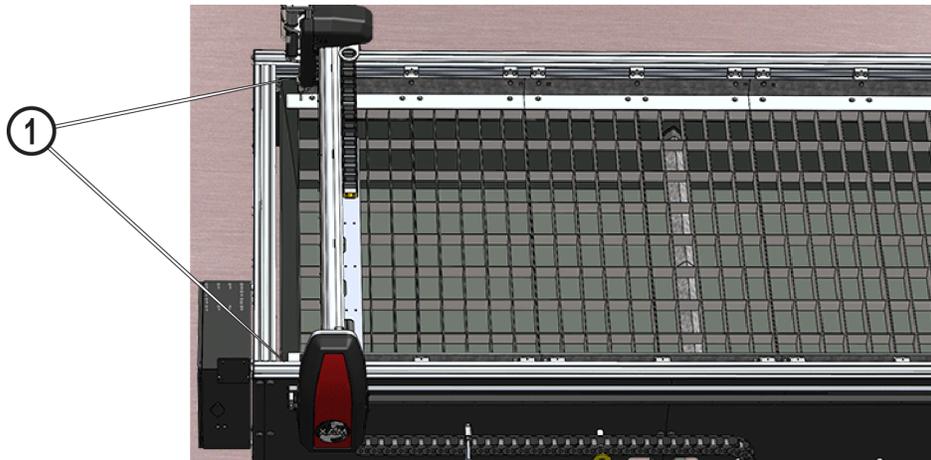


Figure 33

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



Figure 34

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

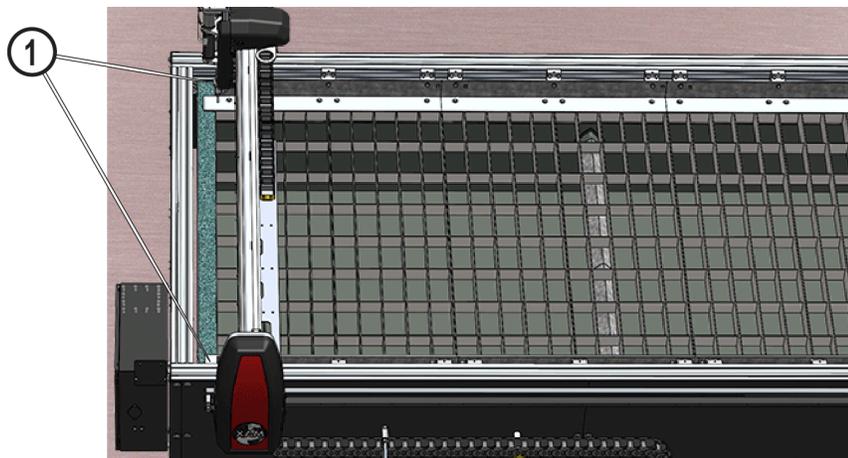


Figure 35

3. Push the **foam dam** down level with the edge of the **slat grate**.



Figure 36

## Drain Side

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

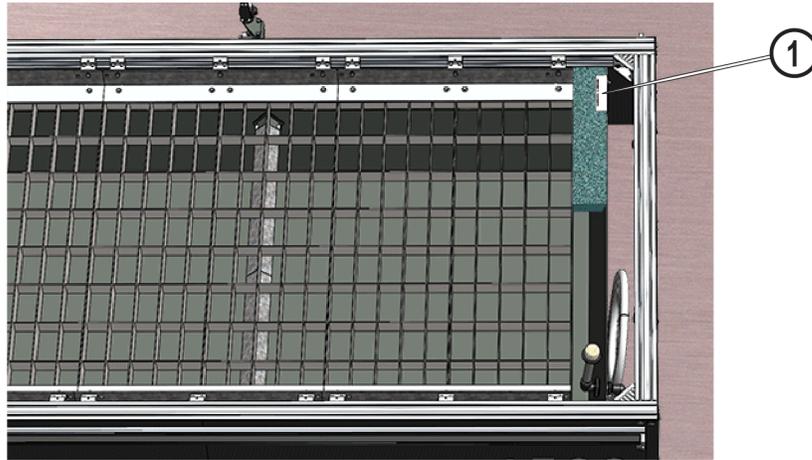


Figure 37

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



Figure 38

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**.

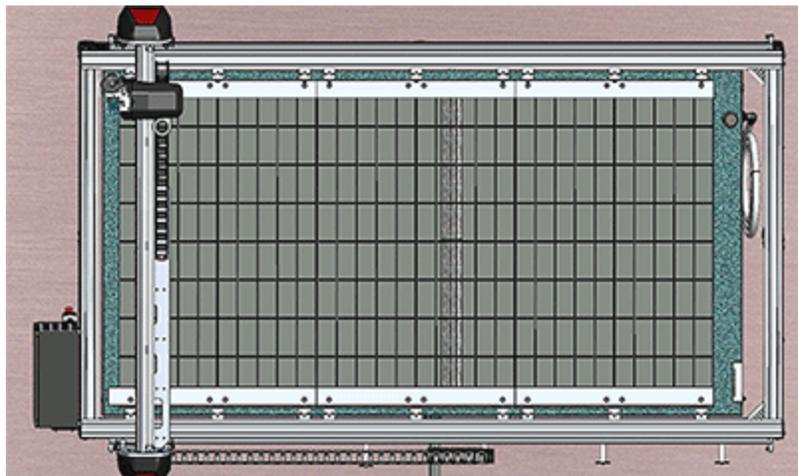


Figure 41

# 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.



Figure 42

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

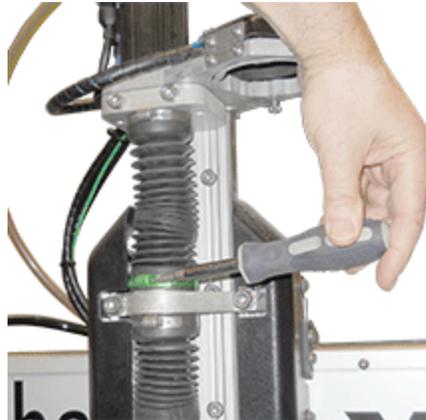


Figure 43

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

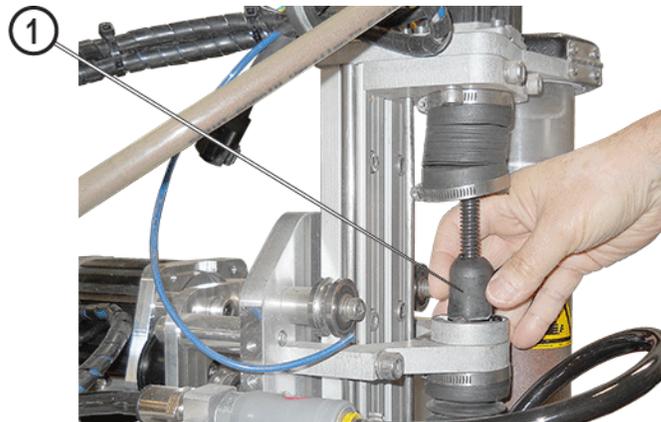


Figure 44

# Refilling the Grease Boot

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

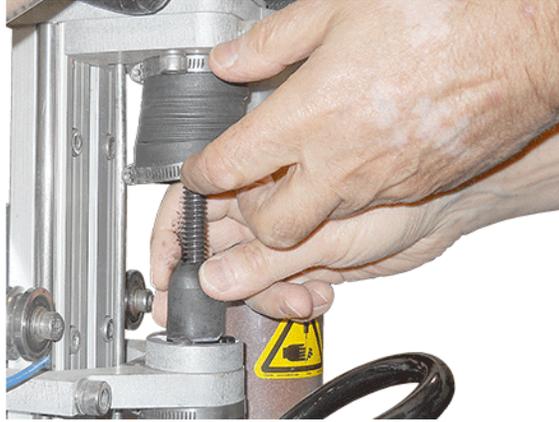


Figure 45

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



Figure 46

c. Release the **grease boot**.

6. Lower the **bellows** over the **bellows adapter**.



Figure 47

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

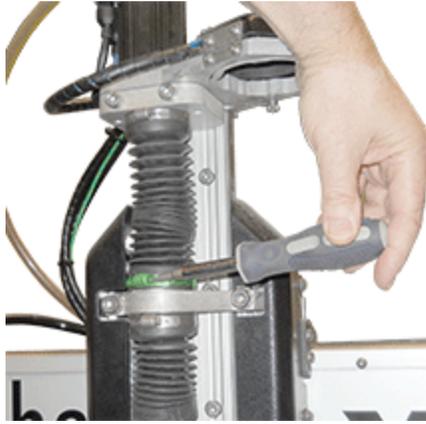


Figure 48

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



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 is 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.**

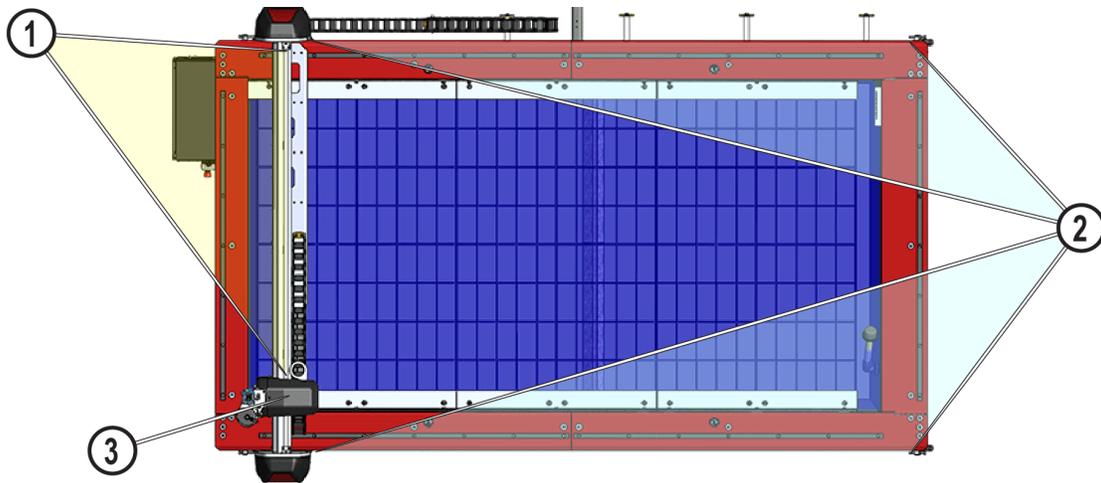


Figure 50

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).*

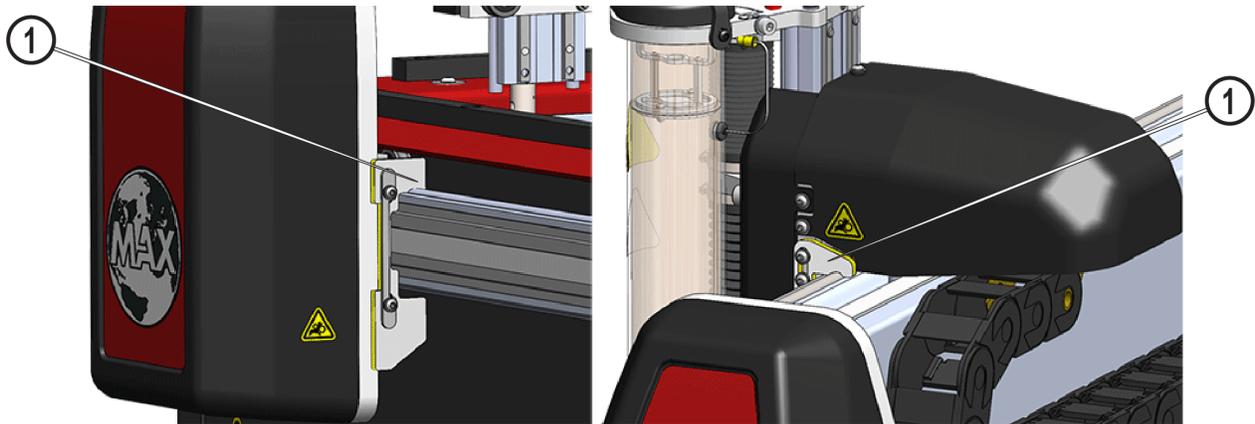
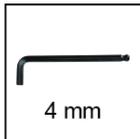


Figure 51

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



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.

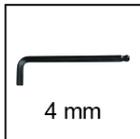


Figure 52

- 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.*



# 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).

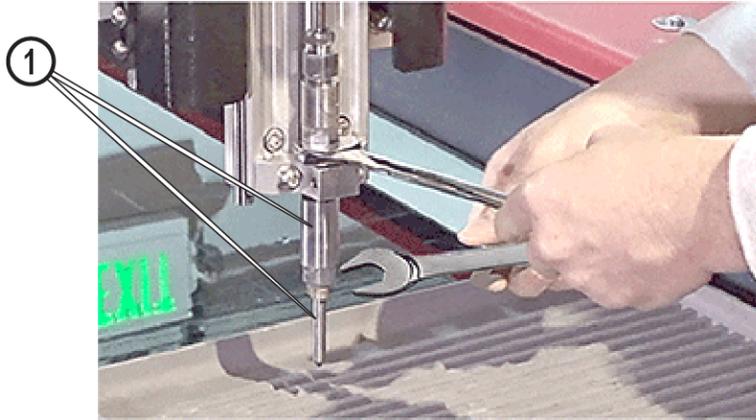


Figure 53

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

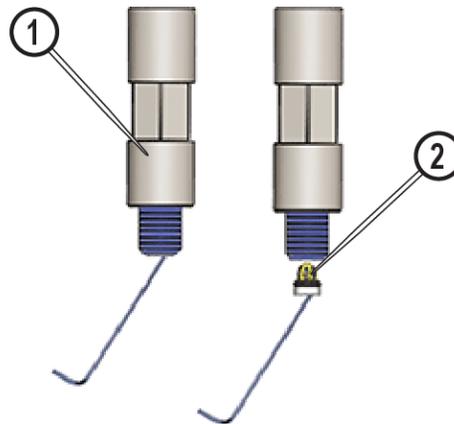


Figure 54

3. Inspect the **O-ring** [1] and **seal** [2] for damage and replace as needed.

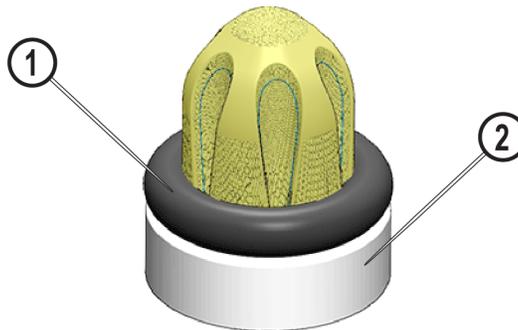


Figure 55

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.

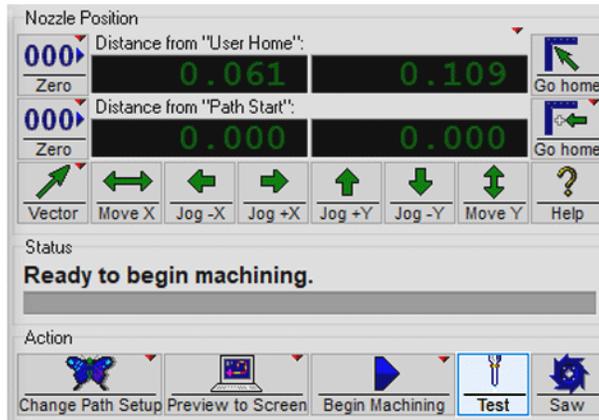


Figure 56

### ⚠ CAUTION

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

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

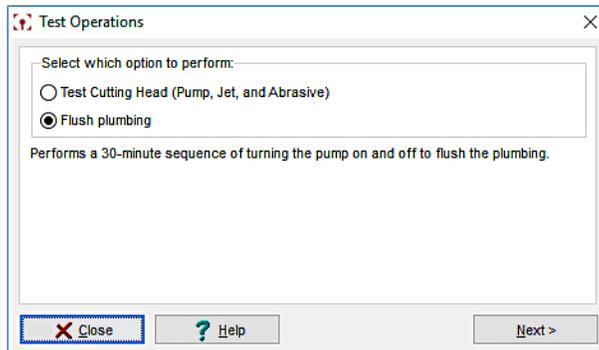


Figure 57

4. Click **Start Flush**.

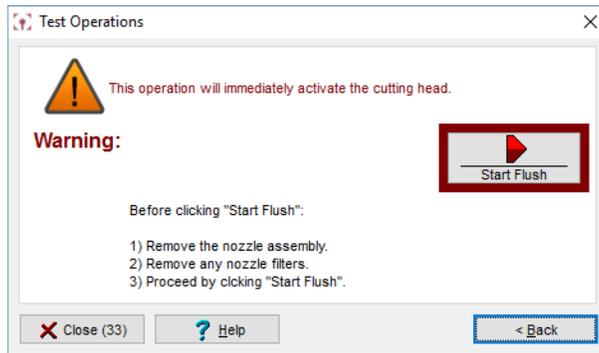


Figure 58

## 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.*

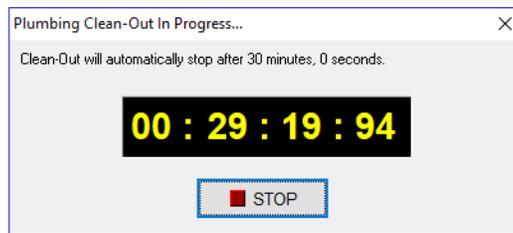


Figure 59

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

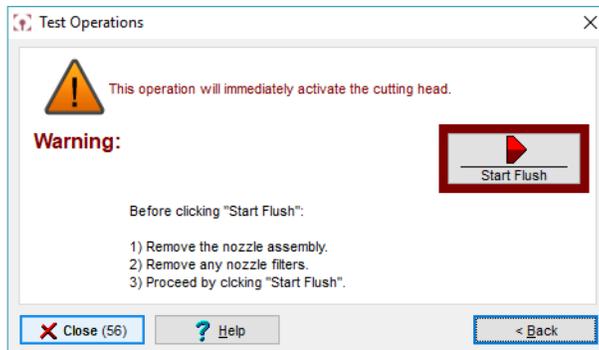


Figure 60

# 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].

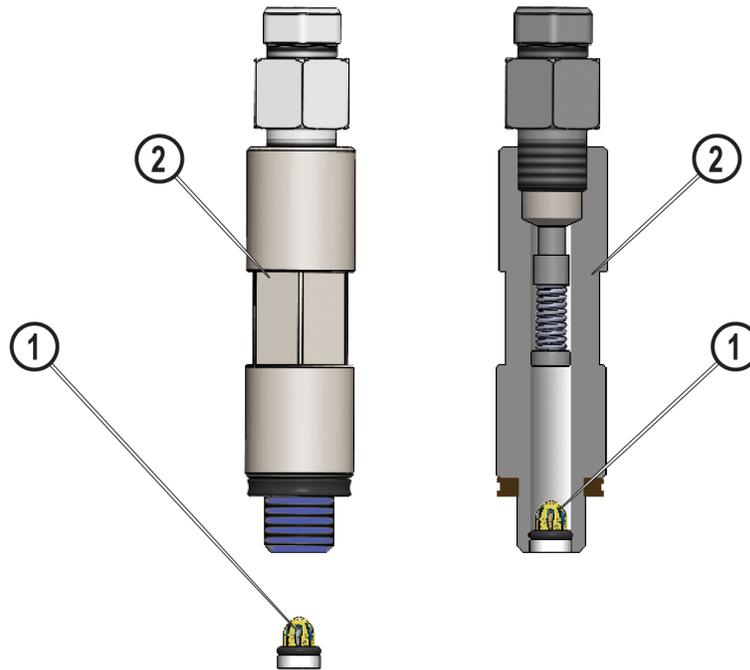


Figure 61

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



3/4 in.

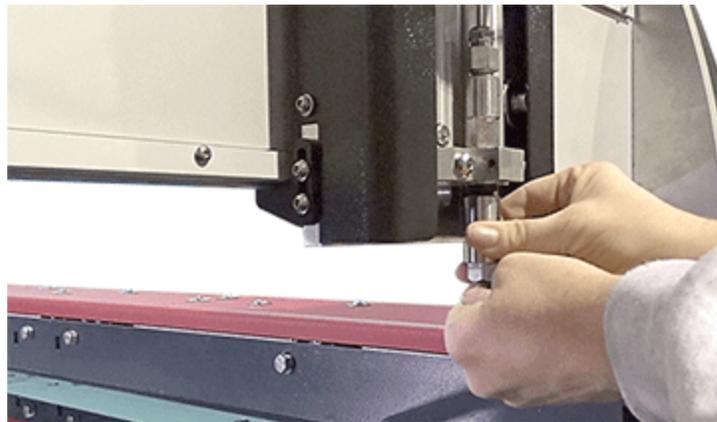


Figure 62

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.



Figure 63

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

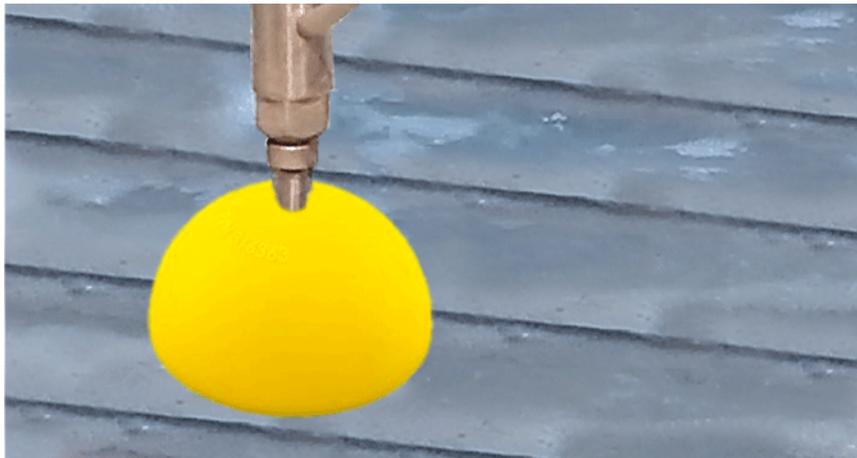


Figure 64

## NOTE

*The machine is now ready for operation.*

# Customer Support

Refer to the [omax.com/support](http://omax.com/support) website for technical documents and distributor support.