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Autoclamp Goliath Guillotine Pipe Saw User's Manual



Wachs Subsea Part No. 06-150-520-MAN
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**EU DECLARATION OF CONFORMITY
WITH
COUNCIL DIRECTIVE 2006/42/EC**

Issue Details:	Date: 9/19/2014	Place: E.H. Wachs, Lincolnshire, IL USA
Directives:	Machinery Safety Directive 2006/42/EC	
Conforming Machinery:	Goliath Saw Topside Control Unit	
Model Number:	P06-150-520 H10-023-000	
Serial Number:		
Manufacturer:	E.H. Wachs Company 600 Knightsbridge Parkway Lincolnshire IL 60069 USA	
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Harmonised Standards & Other Technical Standards/Specifications Applied or Referenced:	EN ISO 12100:2010, EN ISO 13849-1-2, EN ISO 61310-1-2:2008, EN ISO 4413:2010, ISO 6149-1-2-3, ISO 11688-1, ISO 19902	
Provisions with which Conformity is Declared:	Essential Health and Safety Requirements of Annex 1 of the Machinery Directive	
We hereby certify that the machinery described above conforms to the provisions of Council Directive 2006/42/EC on the approximation of the laws of the Member States relating to the safety of machinery.		
Signed:		
Signatory:	Pete Mullally Quality Manager E.H. Wachs	

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Chapter 1

About This Manual

PURPOSE OF THIS MANUAL

This manual explains how to operate and maintain the Goliath Guillotine pipe saw. It includes instructions for set-up, operation, and maintenance. It also contains parts lists and diagrams, and troubleshooting instructions to help you order replacement parts and perform user-serviceable repairs.

Before operating the Goliath, you should read through this manual and become familiar with all instructions. At a minimum, make sure you read and understand the following chapters:

- Chapter 1, About This Manual
- Chapter 2, Safety
- Chapter 3, Introduction to the Goliath Guillotine
- Chapter 5, Operating Instructions

If you will be performing service or repairs, make sure you read and understand these chapters:

- Chapter 1, About This Manual
- Chapter 4, Assembly and Disassembly
- Chapter 6, Routine Maintenance
- Chapter 7, Troubleshooting and Repair.

In This Chapter

PURPOSE OF THIS MANUAL
HOW TO USE THE MANUAL
SYMBOLS AND WARNINGS
MANUAL UPDATES AND
REVISION TRACKING

Throughout this manual, refer to this column for warnings, cautions, and notices with supplementary information.

You will also want to refer to Chapter 8, Parts Lists and Drawings.

HOW TO USE THE MANUAL

This manual is organized to help you quickly find the information you need. Each chapter describes a specific topic on using or maintaining the equipment.

Each page is designed with two columns. This large column on the inside of the page contains instructions and illustrations. Use these instructions to operate and maintain the equipment.

The narrower column on the outside contains additional information such as warnings, special notes, and definitions. Refer to it for safety notes and other information.

SYMBOLS AND WARNINGS

The following symbols are used throughout this manual to indicate special alerts and notes. They appear in the outside column of the page, next to the section they refer to. Make sure you understand what each symbol means, and follow all instructions for cautions and warnings.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



NOTE

This symbol indicates a user notice. **Notices** provide additional information to supplement the instructions, or tips for easier operation.

MANUAL UPDATES AND REVISION TRACKING

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. Revised chapters will be available for customers. If you receive revised chapters for your manual, remove the old chapters from your binder and replace them with the new chapters.

When a manual is revised, we will update the revision history on the title page and at the bottom of the pages in the revised chapters. It is important to put the current title page with the revision history in your manual. This will help you make sure you have all current information.

You may have factory service or upgrades performed on the equipment. If this service changes any technical data or operation and maintenance procedures, we will include revised sections of the manual when we return the equipment to you. Remove the old chapters from your manual and replace them with the revised chapters.

Revision 1, July 2010: Addition of exploded view drawings

Current versions of E.H. Wachs manuals are also available in PDF format. You can request an electronic copy of this manual by emailing customer service at sales@ehwachs.com.



Chapter 2

Safety

E.H. Wachs takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

Read this chapter carefully before operating your E.H. Wachs equipment. It contains important safety instructions and recommendations.

SAFE OPERATING GUIDELINES

Follow these guidelines for safe operation of all E.H. Wachs equipment.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin. Keep this manual with the machine.
- **INSPECT MACHINE AND ACCESSORIES BEFORE USE.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.
- **ALWAYS READ STICKERS AND LABELS.** Make sure all labels and stickers are in place, clearly legible, and in good condition. Refer to “Safety Labels” later in this chapter for label locations on the machine. Replace any damaged or missing safety labels; see Chapter 10 for ordering information.

In This Chapter

SAFE OPERATING GUIDELINES

SAFE OPERATION OF THE
GOLIATH GUILLOTINE PIPE SAW



Look for this symbol throughout the manual. It indicates a personal injury hazard.

- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts. Always turn the machine off and disconnect the power source before doing any adjustments or service.
- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **FOLLOW SAFE PROCEDURES FOR HANDLING LUBRICANTS.** Refer to the manufacturer's instructions and the Material Safety Data Sheets.

Safe Operating Environment

- Do not use this equipment in a potentially explosive atmosphere. Fire or explosion could result, with the risk of serious injury or death.
- Provide adequate lighting to use the equipment, in accordance with worksite or local regulations.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Operating and Maintenance Safety

- This equipment is to be operated and maintained only by qualified, trained personnel.
- Make sure the equipment is stable when attached to the workpiece for the operation. Ensuring stability of the installed tool is the responsibility of the operator.
- Make sure the workpiece is supported adequately for installation of the equipment. This includes supporting any workpiece "fall-off" section when severing the workpiece. Ensuring support of the workpiece is the responsibility of the operator.
- Tooling on any cutting equipment—including lathe tools, saw blades, milling tools, etc.—may get very hot. Do not touch tooling until you have made sure it is cool enough to handle.
- Wear gloves when removing or cleaning up chips and cutting debris. Chips can be very sharp and cause cuts.
- Before performing any service on the equipment, disconnect the power source. Follow all lock-out/tag-out procedures required at the worksite.

Hydraulic Powered Equipment

- Hydraulic components such as hoses, motors, and manifolds will get hot during operation and may cause burns. Do not touch hydraulic components, except for operator controls, during or after operating the machine.
- **Hydraulic injection injury**—A pinhole in a hydraulic hose or fitting can eject fluid with enough force to pierce skin. Check hoses and fittings regularly for leaks. **Do not use bare hands to check for leaks while the system is pressurized.** If you suspect a leak, move a piece of paper or cardboard at least 6 inches (15 cm) over the suspicious area and watch for fluid spraying on the surface.

Loss or Shut-Off of Power Supply

- If the power source to the equipment is lost, disconnect power from the equipment and lock out the power supply immediately to prevent accidental restarting of the machine.
- For all power sources, follow all lock-out/tag-out procedures required at the worksite when disconnecting or servicing the equipment.

Safety Alerts in This Manual

The following alerts are used throughout this manual to indicate operator safety hazards. In all cases, these alerts include a notice describing the hazard and the means to avoid or reduce risk. Carefully read all safety alerts.



This icon is displayed with any safety alert that indicates a personal injury hazard.

WARNING

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.



WARNING

Injection of hydraulic fluid through the skin is a serious injury that can result in infection, tissue damage, and possible loss of limb. **Seek medical treatment immediately.** First aid is not sufficient treatment for injection injury.

 CAUTION

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

Protective Equipment Requirements

Protective Clothing

Wear safety shoes when operating or servicing the equipment. Serious injury could result from dropping the machine or its components.

Do not wear gloves while operating the machine. Gloves can become entangled in moving parts, resulting in serious injury. Gloves may be worn when setting up the machine or cleaning up after the operation, but take them off when operating the machine.

Eye Protection

Always wear impact-resistant eye protection while operating or working near this equipment.

For additional information on eye and face protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.133., Eye and Face Protection and American National Standards Institute, ANSI Z87.1, Occupational and Educational Eye and Face Protection.

Hearing Protection

This equipment can produce noise levels above 80 dB. Hearing protection is required when operating the equipment. The operation of other tools and equipment in the area, reflective surfaces, process noises, and resonant structures can increase the noise level in the area.

For additional information on hearing protection, refer to Federal OSHA regulations, 29 Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure and ANSI S12.6 Hearing Protectors.



NOTE

Gloves should be worn when cleaning up chips and other cutting debris. Chips can be very sharp and can cause serious cuts. **Do not wear gloves when the machine is operating.**

SAFE OPERATION OF THE GOLIATH GUILLOTINE PIPE SAW

Intended Uses

The Goliath Guillotine pipe saw is designed to be clamped onto an in-line or open-ended pipe, using a hydraulic autoclamp mechanism, and cut through the pipe using an oscillating saw motion.

Make sure to follow all safety guidelines and procedures required for machining operations at the work site, including personal protective equipment (PPE). Do not use the Guillotine pipe saw in a manner that violates these guidelines.

Proper Use of the Guillotine

- The Guillotine should only be used by trained, qualified operators.
- The workpiece must be within the operating capacity of the Guillotine model you are using. See operating envelope information and drawings in Chapter 3.
- Make sure the operating environment allows you to mount the machine securely and squarely on the workpiece.
- Make sure there is adequate clearance around the Guillotine and workpiece to operate the machine controls as described in the operating instructions (Chapter 5).
- Mount the Guillotine in an orientation that allows convenient connection of the drive power supply (air or hydraulic).
- Mount the Guillotine so that the feed drive can be operated conveniently, without reaching across moving parts.
- Use the Guillotine only on empty, depressurized pipe.

Misuse

- Do not attempt to mount or operate the Guillotine on any workpiece to which it cannot be securely clamped.
- Do not attempt to mount or operate the Guillotine on any workpiece that is not stable enough to hold the machine.

- Do not mount the Guillotine on the “fall-off” side of the cut line, unless you adequately rig and support the Guillotine and workpiece.
- Do not disable any safety feature of the Guillotine or remove any safety labeling. Replace worn or damaged safety labels immediately. (See “Safety and Operation Labels” later in this chapter.)

Potential Hazards

Figure 2-1 illustrates potential hazards of operating the Guillotine pipe saw. Refer to the description of each hazard for guidelines on safe operation.

- A. Moving Parts Hazard—Keep away from the oscillating saw bow and all moving parts while the machine is operating.
- B. Pipe Saddle Mounting Point—Keep hands and feet clear when mounting and moving the saw on the workpiece.
- C. Cutting Zone—Keep away from the saw blade while the machine is operating. Use care when handling the saw blade and cutting debris.

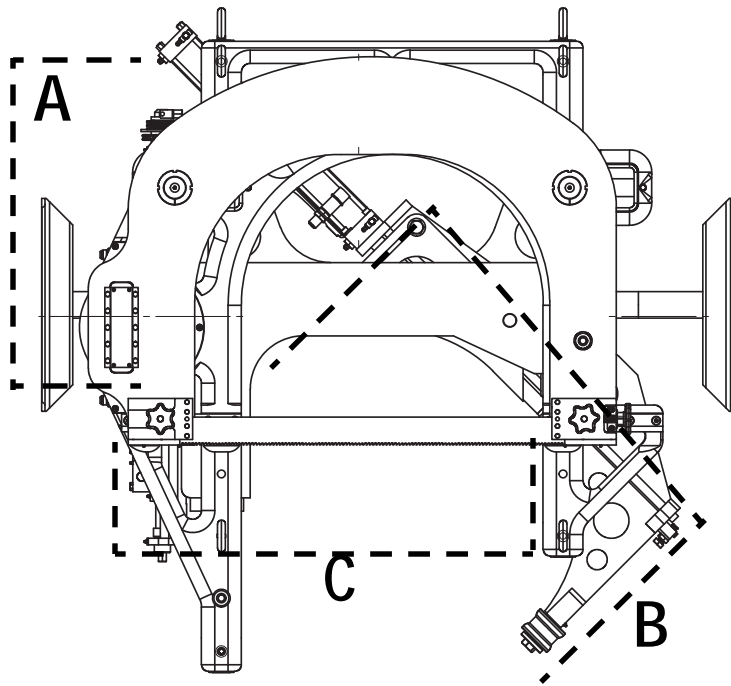


Figure 2-1. Potential operating hazards of the Guillotine saw. See the descriptions in the side column.

Guidelines for Safe Setup, Operation, and Service

Pre-Operation Checklist

Every time you use the Guillotine, perform the following checks to make sure it is in good operating condition:

- Check that all safety components are operating properly.
- Inspect it for damage or wear that could affect operation and safe use of the machine. Repair any defective component before using the machine.
- Make sure the machine is clean and properly lubricated.
- Make sure that the blade is sharp and in good condition. A poor quality blade can cause difficult cutting and the possibility of machine malfunction and/or injury.
- Check power connections to make sure they are in good condition.

Operating Safety

- Stop the Guillotine cutting motion to adjust the workpiece (shim, wedge, clear chips, etc.) or make any machine adjustments.
- Use a support structure or catch device to prevent the cut-off piece of the pipe from falling.
- Keep hydraulic hoses away from moving parts while operating the machine.

Service Checklist

- Disconnect power from the Guillotine during service.
- Retract the saw bow before performing service. Do not disassemble any components of the saw with the blade in the workpiece.

Safe Lifting and Handling

Use care when lifting the Guillotine saw to avoid injury. A lifting device (crane or hoist) is required for lifting and mounting the saw.

- Use the lift eyes on the saw to lift it. **Do not attach the lifting device to other components.**
- Do not rig or lift the Guillotine while power is attached.

Machine Weight

The weight of the Goliath Guillotine is 2100 lb (955 kg).

Safety and Operation Labels

The following labels are provided on the Goliath Guillotine. If any of these labels is damaged or missing, replace it immediately. See Chapter 8 for ordering information.



Figure 2-2. The Lubrication and Safety Harness labels are on the top of the saw bow, with the product plate.



Figure 2-3. The crush hazard warning label is attached in 2 places on the saw frame assembly.



Figure 2-4. The crush hazard warning label and blade direction label are attached on both sides of the saw bow.



Chapter 3

Introduction to the Goliath Guillotine

.....

Read this chapter carefully to become familiar with the components and features of your Goliath Guillotine pipe saw.

USAGE AND APPLICATIONS

The Goliath Guillotine is designed to cold-cut pipes, solids, and multi-stranded casing strings from 16” to 32” (41 to 81 cm) in diameter. The Goliath is easy to set up, even sub-sea, with an autoclamp mechanism and topside controls for remote operation.

The Goliath Guillotine operates on hydraulic power, with two heavy-duty hydraulic motors requiring a power source with 15 gpm flow at 1500 psi (standard) or 15 gpm @ 2000 psi (autoclamp).

Figure 3-1 illustrates the components of the standard Goliath Guillotine. Figure 3-2 shows the saw using the autoclamp. The autoclamp arm closes under hydraulic power and holds the pipe in the pipe saddle during cutting.

In This Chapter

USAGE AND APPLICATIONS

MACHINE CONTROL

SPECIFICATIONS

OPERATING ENVELOPE

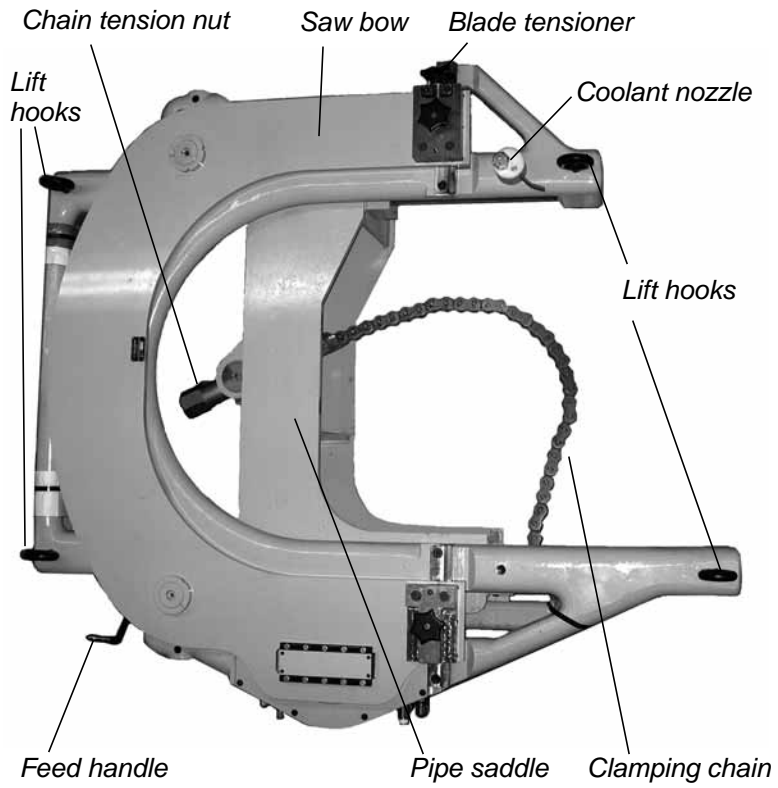


Figure 3-1. Components of the standard Goliath Guillotine are illustrated.



Figure 3-2. Goliath with autoclamp accessory.

MACHINE CONTROL

The subsea Goliath Guillotine has three mechanical drive systems: the saw motion, the autoclamp mechanism, and the hydraulic autofeed. The Goliath is fitted with a hydraulic connector bulkhead for connection to hydraulic power.

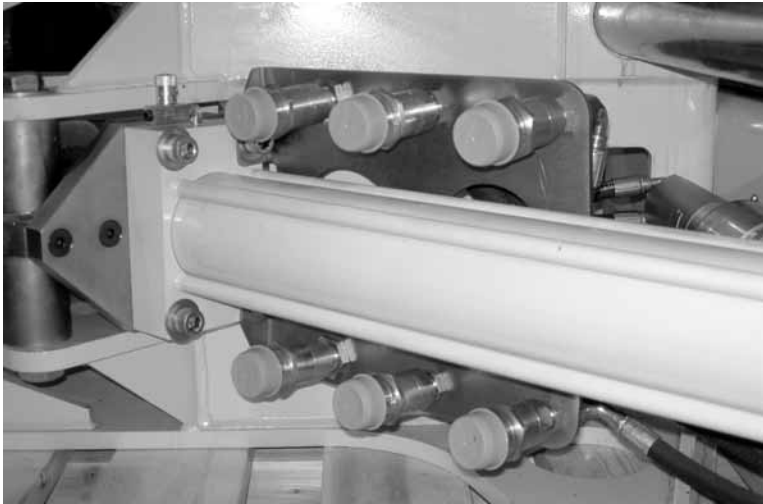


Figure 3-3. The hydraulic fitting bulkhead on the saw has connectors for the three drives.

Universal Control Panel (UCP)

Figure 3-4 illustrates the controls used to operate the Goliath Guillotine. Chapter 5 includes detailed instructions.



NOTE

For CE compliance, the Goliath Guillotine must be operated using a Wachs Subsea UCP.

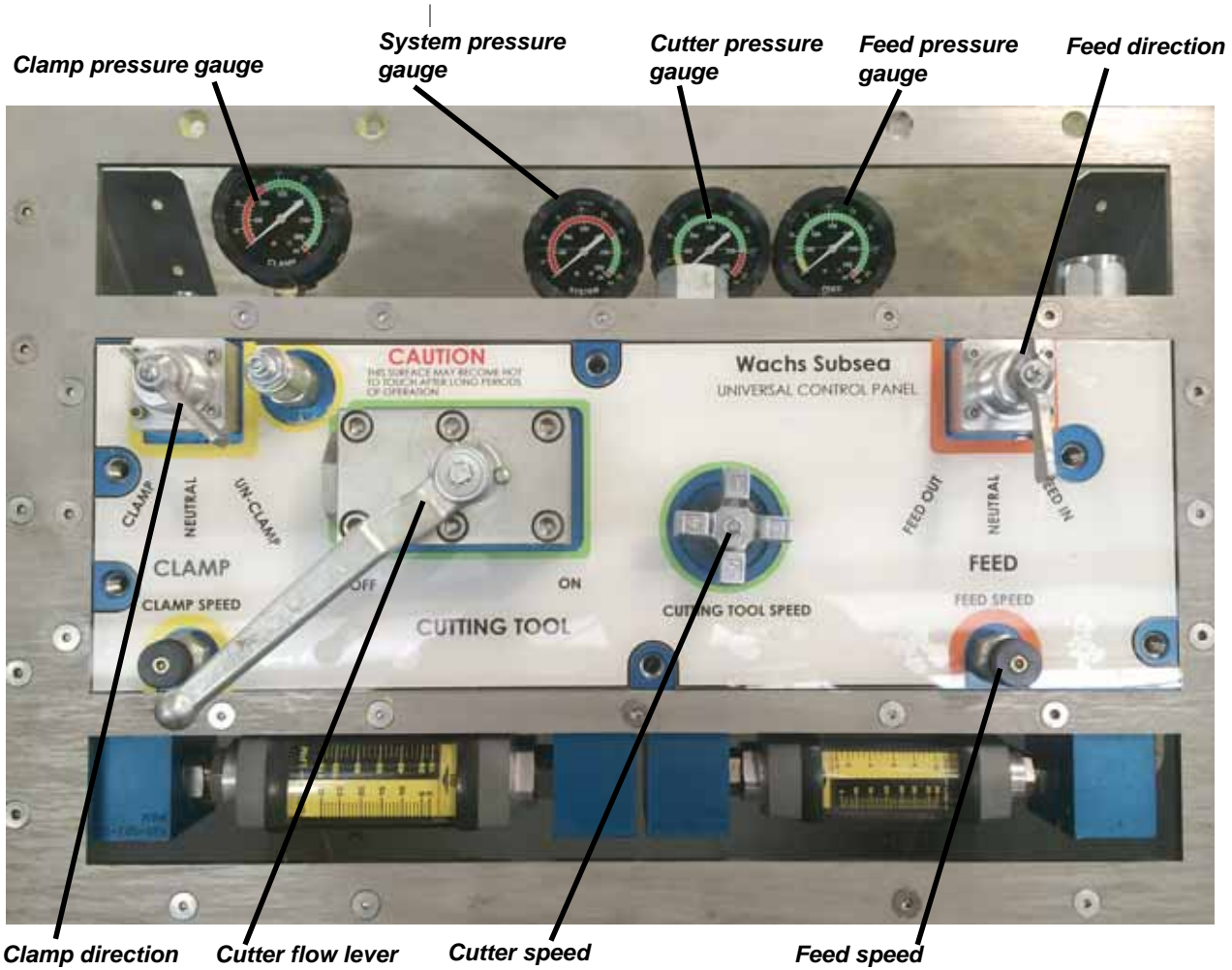


Figure 3-4. The photo illustrates the controls on the universal control panel. (Some UCP models have a different arrangement; see labeling on the UCP.)

SPECIFICATIONS

Capacity	16-32" (41-82 cm) diameter pipe
Hydraulic requirements	Standard: 15 gpm @ 1500 psi (57 l/m @ 103 bar) Autoclamp: 15 gpm @ 2000 psi (57 l/m @ 138 bar)
Feed system	Manual or mechanical autofeed (selectable by operator)
Autofeed rate (per cycle)	Low speed: 0.008" (0.020 cm) High speed: 0.016" (0.041 cm)
Dimensions (standard)	Length: 76.5" (194 cm) Width: 66" (168 cm) Height: 25" (63.5 cm)
Dimensions (with autoclamp)	Length: 82.5" (210 cm) Width: 78" (198 cm) Height: 25.9" (65.8 cm)
Weight	Standard: 1800 lbs (818 kg) Autoclamp: 2100 lbs (955 kg)
Finish	Painted cast surfaces; chrome-plated rods; other components zinc-nickel iridescent chromated.

OPERATING ENVELOPE

The drawing in Figure 3-5 shows the operating envelope for the Goliath Guillotine saw.

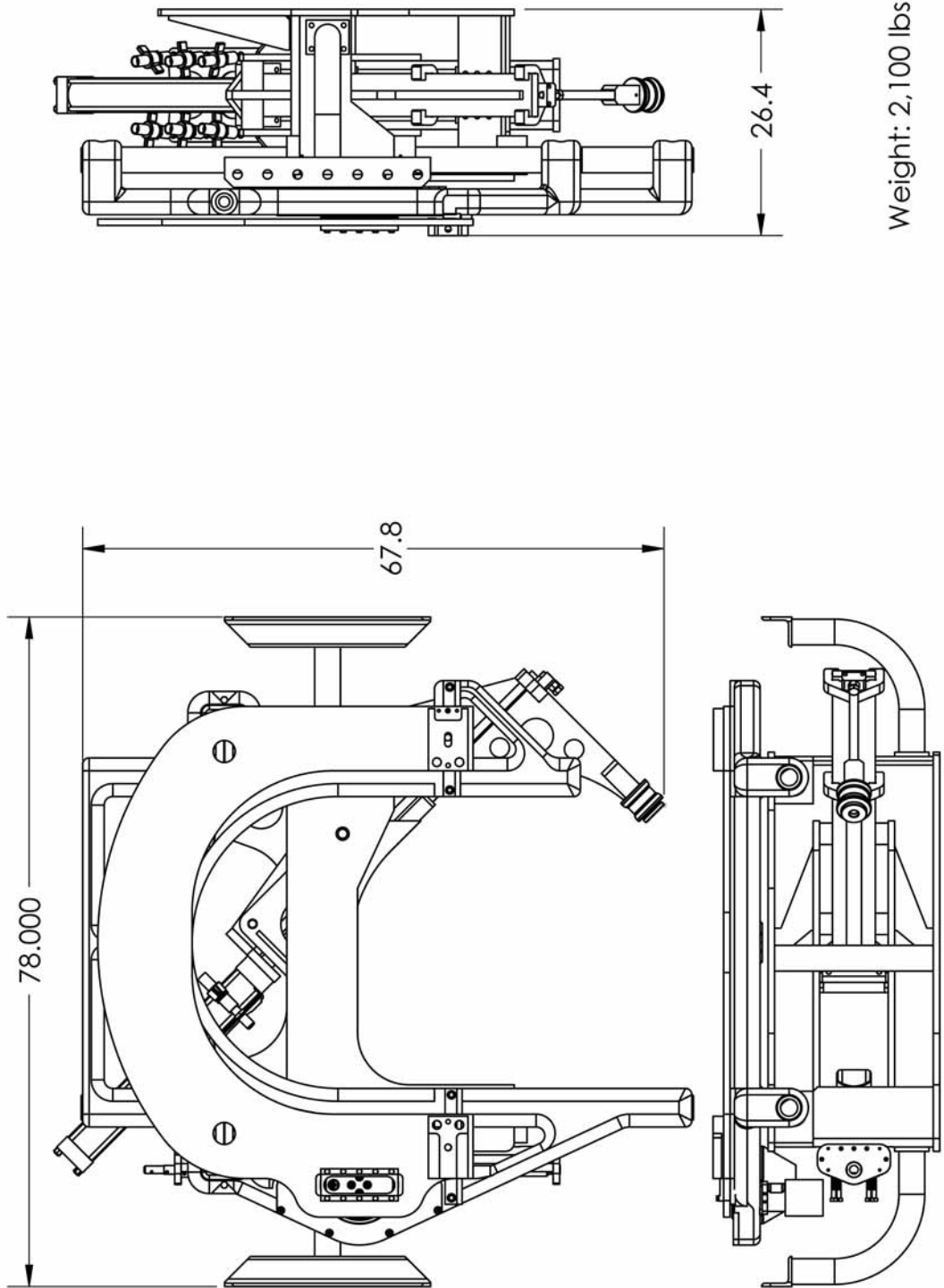


Figure 3-5. The drawing shows the operating envelope for the Goliath.

Chapter 4

Assembly, Disassembly, and Storage

The Goliath Guillotine pipe saw is shipped fully assembled from the factory, except for the blade and the clamping chain. It is ready to operate as soon as you remove it from its shipping pallet.

ENVIRONMENTAL REQUIREMENTS

The Goliath Guillotine can be used in any environment, including underwater and undersea.

Be sure to follow the environmental guidelines for the hydraulic power unit you are using with the saw.

LONG-TERM STORAGE

If the saw has been used in salt water, spray it thoroughly with fresh water to remove salt residue. Grease all grease fittings before storage, and apply machine oil to the rods, screw, and gears.

Strap the saw securely to its shipping pallet. If possible, store the saw in a dry, non-corrosive environment.

In This Chapter

ENVIRONMENTAL
REQUIREMENTS

LONG-TERM STORAGE



Chapter 5

Operating Instructions

.....

This chapter includes instructions for operating the Goliath Guillotine saw using the remote universal control panel (UCP).

You should lubricate the Goliath saw before every cut. See lubrication instructions in Chapter 6.

LIFTING THE SAW

The Goliath is provided with four eye hooks for lifting it with a crane. There are ten threaded holes in the frame for mounting eye hooks; put the hooks into the appropriate holes for the way you are mounting the saw on the work-piece. Specific lifting instructions are included in each section of this chapter.

In This Chapter

LIFTING THE SAW

INSTALLING THE BLADE

USING THE AUTOFEED

OPERATING THE MACHINE WITH
THE UCP



Figure 5-1. The photo shows the lift eyes provided with the Goliath Guillotine.

IMPORTANT

Always leave the chains and lift attached to the saw while cutting.

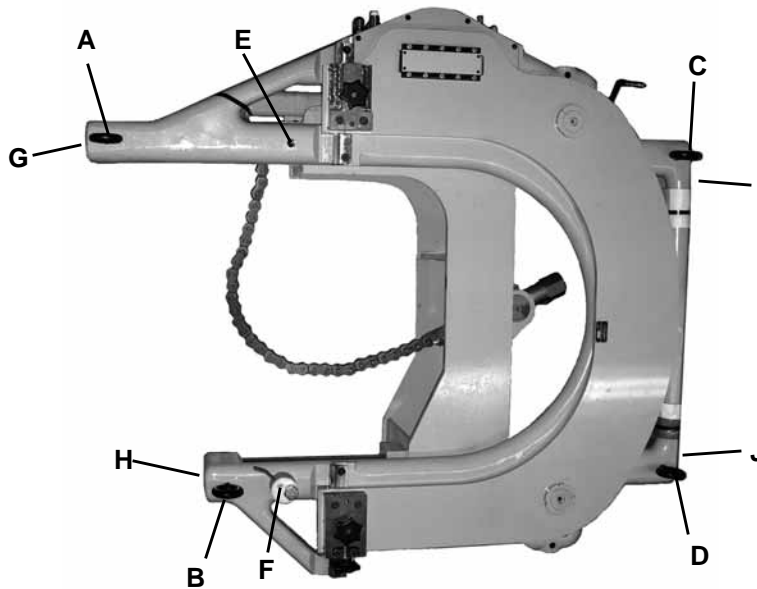


Figure 5-2. Eyebolt locations on the Goliath Guillotine. (Hooks are shown installed in locations A, B, C, and D.) Location F is also used for the optional coolant nozzle, as shown. Locations G, H, I, and J are on the ends of the frame, as shown in Figure 5-3 and Figure 5-4.



*Figure 5-3. The eyebolts can be screwed into the threaded holes **G** and **H** on the end of the frame.*



*Figure 5-4. Eyebolts can be screwed into the threaded holes **I** and **J** in the end of the frame.*

*To mount the saw **on top of a horizontal pipe**—*

- Connect chains to eyebolts installed in frame locations **I** and **J** and lift the saw in a vertical orientation.

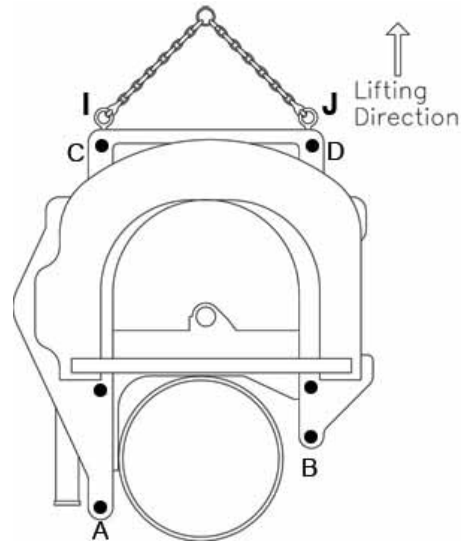


Figure 5-5. Use eyebolt locations **I** and **J** to lift the saw vertically onto a horizontal pipe.

To mount the saw **on the side of a horizontal pipe**—

- Connect chains to eyebolts installed in frame locations **G** and **I** and lift the saw on its side.

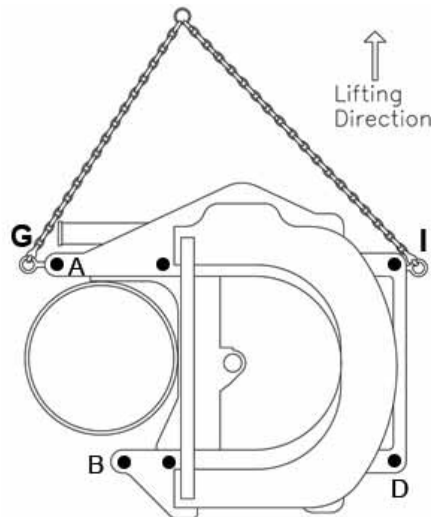


Figure 5-6. Use eyebolt locations **G** and **I** to mount the saw on the side of a horizontal pipe.

To mount the saw **on a vertical pipe**—

- Connect chains to eyebolts installed in frame locations **A**, **C**, and **D**, and lift the saw in a horizontal orientation.

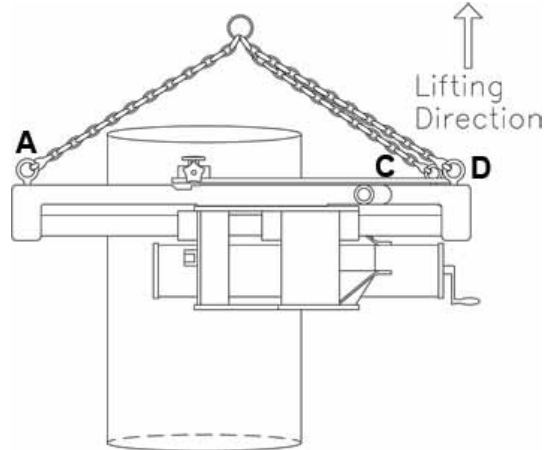


Figure 5-7. Use eyebolt locations **A**, **C**, and **D** to mount the saw on a vertical pipe.

INSTALLING THE BLADE

Installing the blade on the saw is the same for all configurations of the Goliath. There are two different blades available:

- a coarse blade used for heavy wall or multi-strand pipe
- a fine blade used for thin-wall, single-strand pipe.



Figure 5-8. Goliath Guillotine blade. The mounting holes at each end are held by the dowel pins in the clamp blocks.

Mount the saw onto the workpiece before installing the blade.

There are two blade clamp blocks that hold the blade in place, one on each end of the saw bow. The block on the right side (when facing the saddle) has a knob for tensioning the blade, as shown in Figure 5-9.



CAUTION

Use gloves when handling blades to prevent cuts.

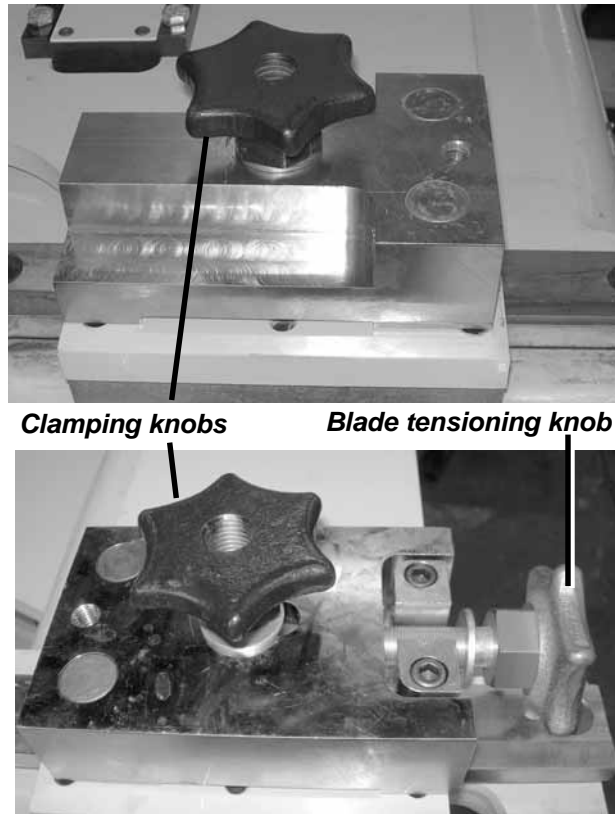


Figure 5-9. The photos show the clamp blocks on the Goliath saw bow. The right block (bottom photo) has a blade tensioning knob.

1. Unscrew the clamp knob on the left clamp block almost to the top of the screw. You will need to lift the block high enough to raise the dowel pins out of the bow.

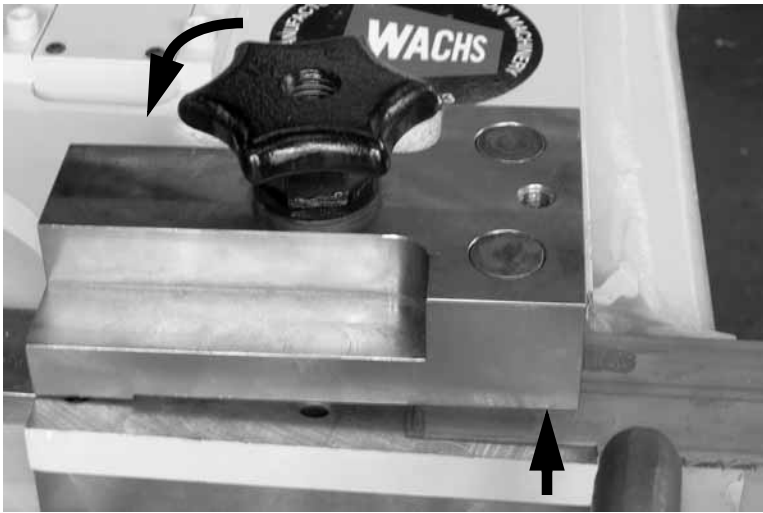
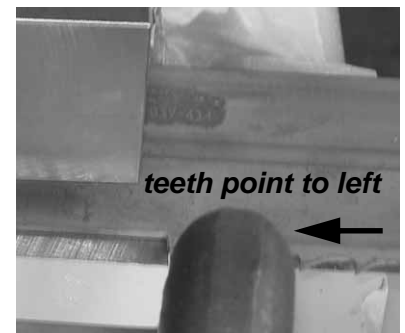


Figure 5-10. Loosen the clamp knob on the left clamp block so that you can raise the dowel pins out of the saw bow.

2. Holding the block up, slide the end of the blade under the block so that the hole in the blade is lined up beneath the dowel pin.
3. Set the clamp block down with the dowel pin through the hole in the blade. Tighten the clamp knob with your fingers until it is just snug.
4. Unscrew the clamp knob on the right block and lift the block to insert the other end of the blade.
5. Set the right block back down with the dowel pin through the hole in the blade and tighten the clamp knob until it is just snug.

IMPORTANT

Install the blade so that the teeth point to the left.



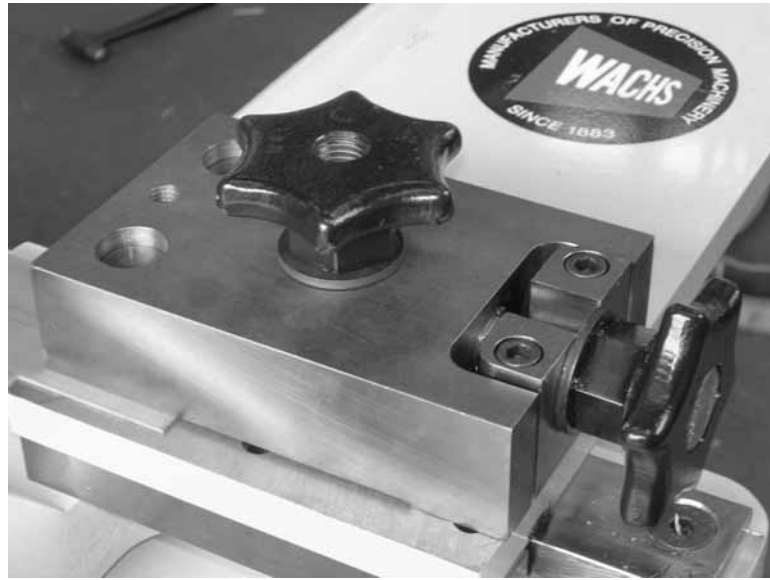


Figure 5-11. Install the right clamp block on the blade and snug the clamp knob.

6. Using the 1-3/8" end wrench, turn the blade tensioning knob on the right clamp block to tighten the blade.



Figure 5-12. Tighten the tensioning knob to pull the saw blade tight.

7. Use the 1-3/8" wrench to tighten the clamp knobs on both clamp blocks.



Figure 5-13. Tighten the clamp knob on both clamp blocks to secure the blade for cutting.

USING THE AUTOFEED

The hydraulic autofeed is operated using the feed controls on the universal control panel (UCP). A separate hydraulic motor turns the autofeed drive, with the speed set independently of the cutting speed.

The hydraulic autofeed mechanism is shown below. Instructions for operating the hydraulic autofeed are in the section of this chapter titled “Operating the Machine with the UCP”.

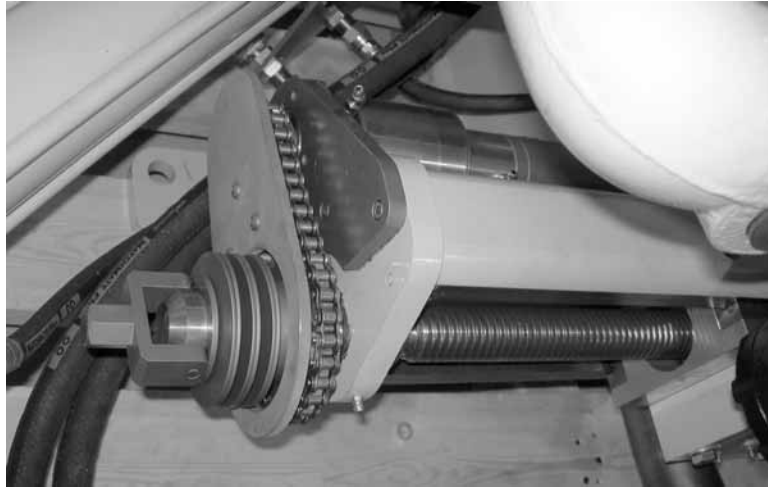


Figure 5-14. The hydraulic autofeed mechanism is shown. The feed can be driven using a wrench on the hex end of the clevis.

OPERATING THE MACHINE WITH THE UCP

This section describes how to install and operate the saw using the topside control unit (TCU).

Connecting the Hoses

1. Connect the clamping drive hoses from the UCP to the fittings on the saw bulkhead as shown below.

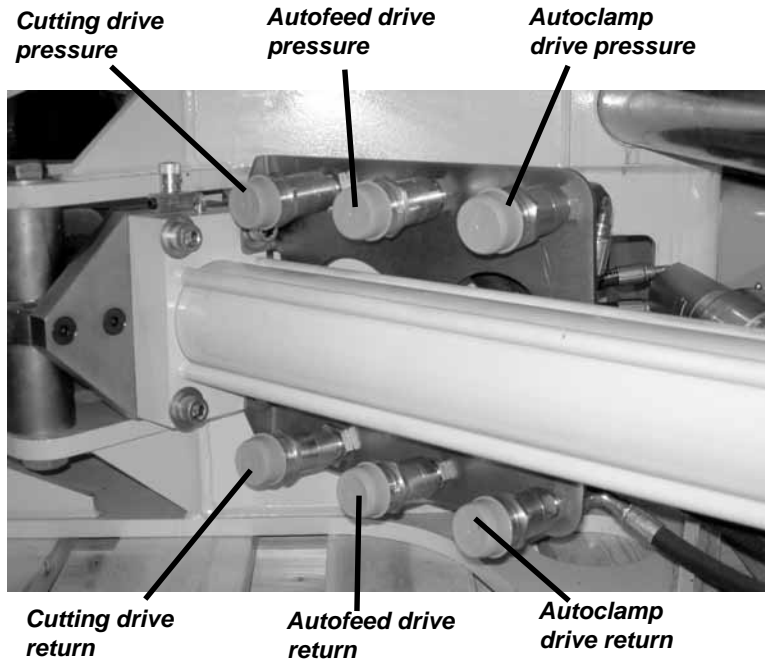


Figure 5-15. Connect the hydraulic drive hoses to the saw as shown.

Clamping the Saw to the Workpiece

1. Position the saw at the cutting location on the pipe, with the saddle against the pipe surface.
2. Start the hydraulic power unit.
3. Use the clamping controls on the UCP to clamp the saw to the pipe.

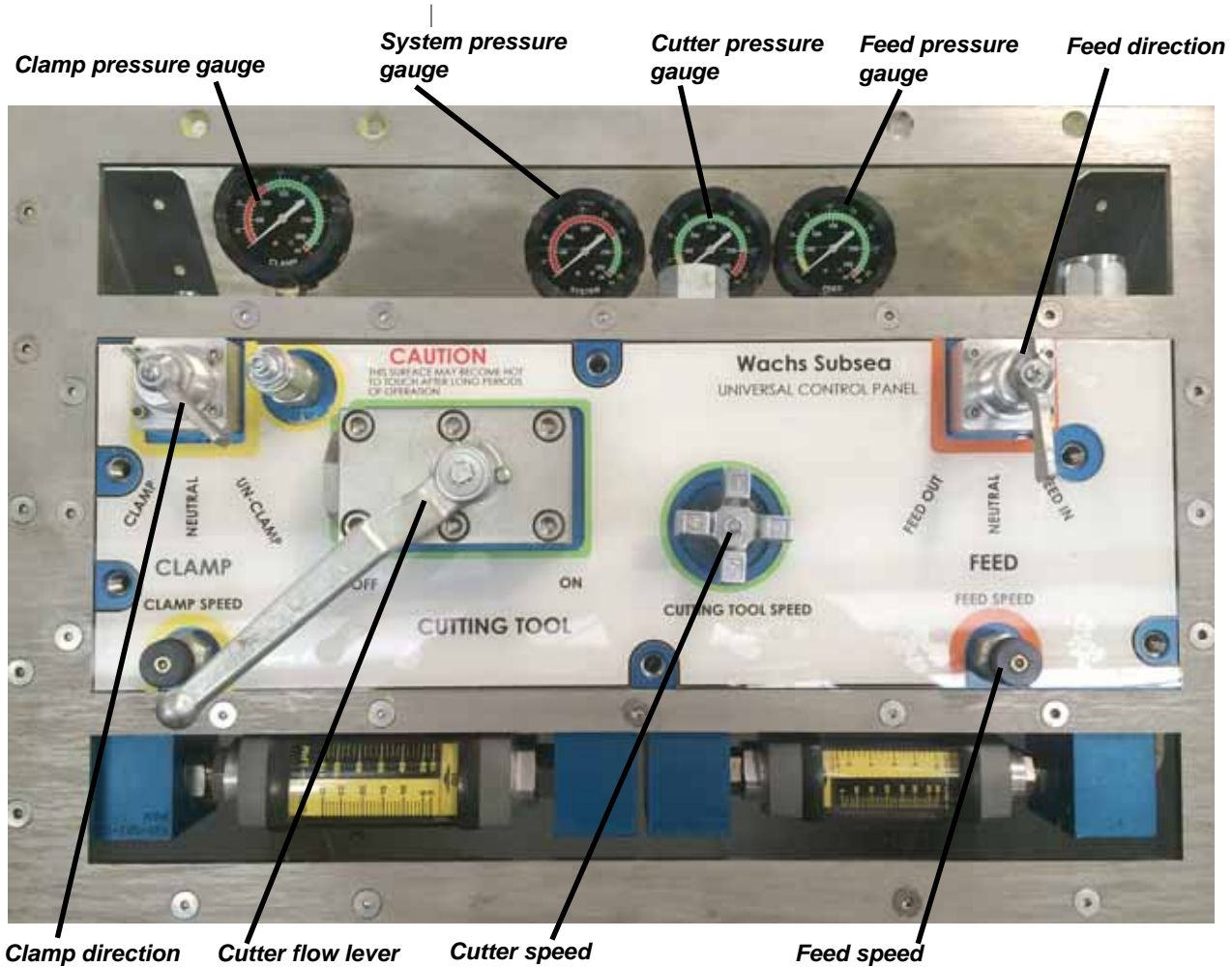


Figure 5-16. The photo illustrates the controls on the universal control panel. (Some UCP models have a different arrangement; see labeling on the UCP.)

4. Slightly lower the crane holding the saw to allow the clamp to hold the saw's weight. Leave the crane attached to the saw.

Operating the Saw

1. On the UCP, use the Cutter Tool lever to turn on the saw motion.
2. Set the Feed Control lever to the Feed In position.
3. Adjust the feed speed lever until the feed motion starts. Set the lever to the desired speed.
4. Set the cutting drive lever for the speed you want. Typically, you can set it to the maximum.
5. Allow the saw to operate at a slow feed rate until the blade has parted through the near wall of the pipe.

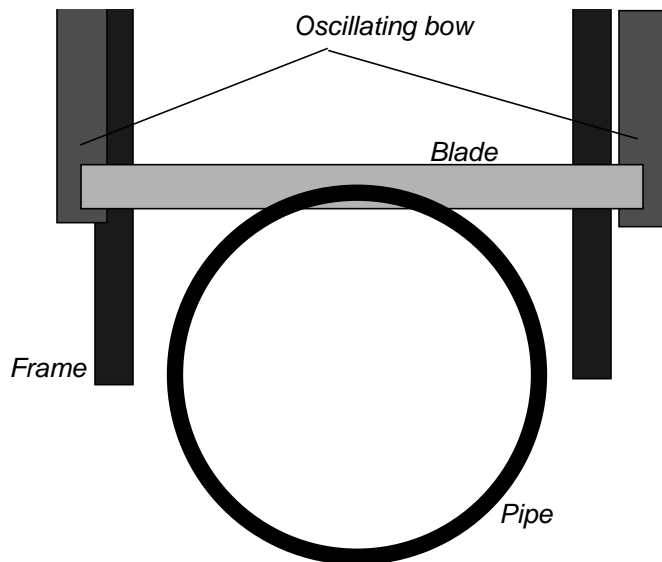


Figure 5-17. Cut at a slow feed rate until the blade parts through the wall of the pipe.

6. After the blade has parted the near wall, you can speed up the feed rate by adjusting the feed speed lever. You may need to slow the rate down if you are cutting an internal casing. Reduce the feed speed if the machine starts to bind or chatter, or if you see the blade deflecting as it cuts.
7. As the blade approaches the far wall of the pipe, slow the feed rate to the setting used at the start. Finish the cut at this feed rate.



**WARNING
IMPORTANT**

Always support the workpiece securely on both sides of the cutting location. Any unsecured section of the workpiece could shift or fall during cutting, damaging the equipment or causing injury to an operator.

Removing the Saw

1. Slowly raise the lift holding the saw until there is just enough tension to hold the saw in place.
2. Use the clamp controls on the UCP to Un-clamp the saw.
3. Use the crane to remove the saw from the workpiece.
4. If you are finished with the saw, turn off the HPU. Set the saw in its storage location and disconnect the hoses.

Chapter 6

Routine Maintenance

Grease all grease points on the Goliath Guillotine every time you use the machine.

GREASE POINTS

Grease the fittings in the following locations on the Goliath:

- Two on top of the saw bow (one on each side)—Figure 6-1.



Figure 6-1. There are two grease fittings on the top of the saw bow.

- Two on the feed drive side of the frame for the frame guide shaft—Figure 6-2.

In This Chapter

GREASE POINTS

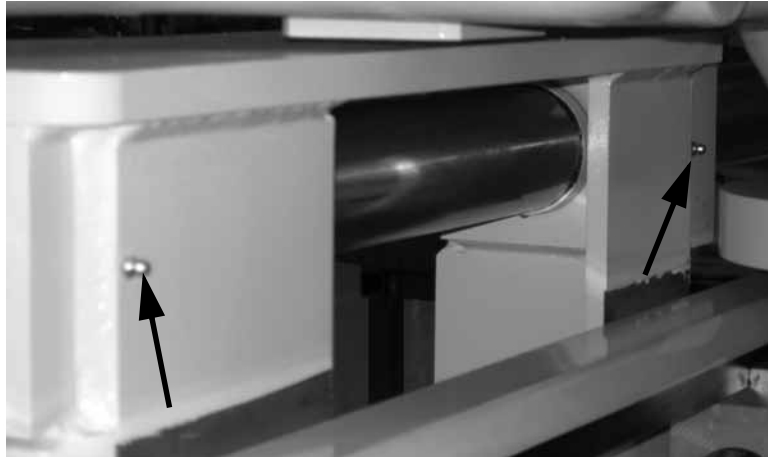


Figure 6-2. Fittings on the feed drive side of the frame. (The saw bow is fed all the way forward.)

- Two on the open side of the frame for the frame guide shaft—Figure 6-3.

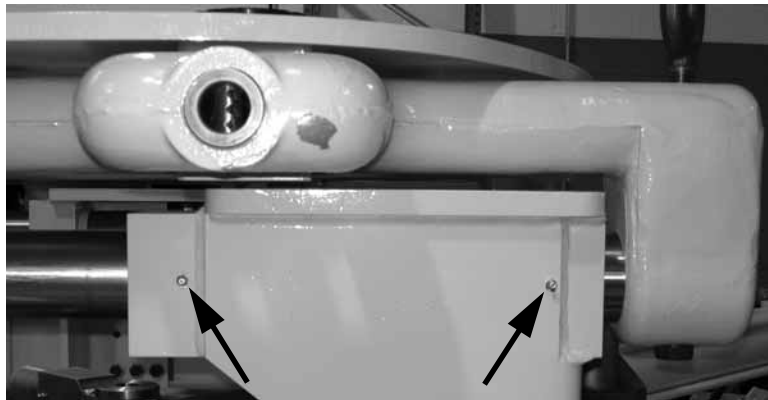


Figure 6-3. Grease fittings for the frame guide shaft on the open side of the frame.

- One on the gear shaft housing—Figure 6-4.

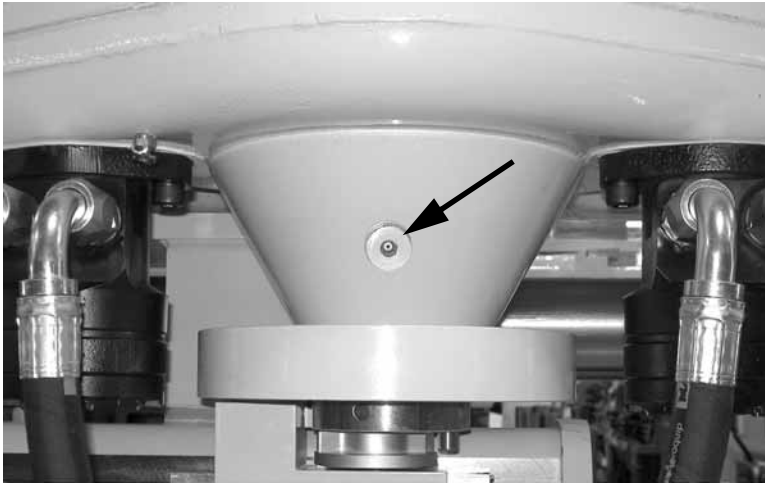


Figure 6-4. Fitting on the gear shaft housing.

- Nine on the feed drive assembly—Figure 6-5:
 - two on the feed frame for the feed screw (one each end)
 - one on the feed slide housing for the feed screw
 - six on the feed shaft mount.



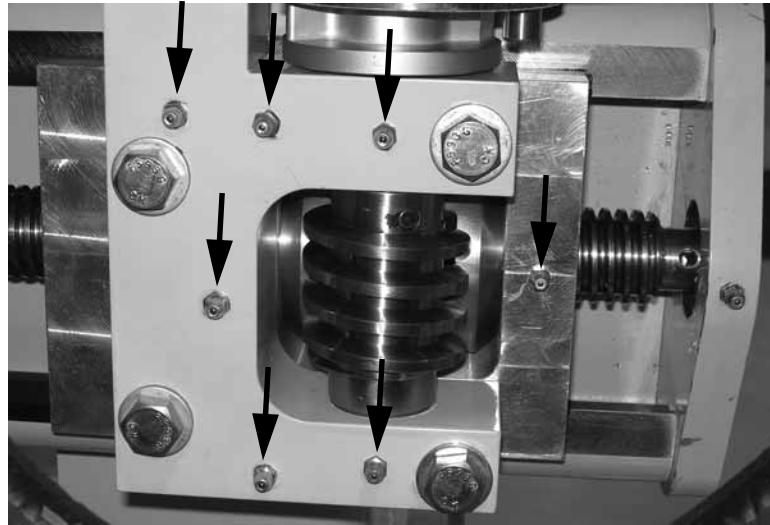


Figure 6-5. There are two fittings on the ends of the feed frame (top photo), and six fittings on the feed shaft mount and one on the feed slide housing (bottom photo).



Figure 6-6. There are two grease fittings on the optional hydraulic autofeed motor.

Also apply grease to the bow guide plate at the ends of the frame. Use a brush or a clean, dry cloth to wipe grease onto the plates.

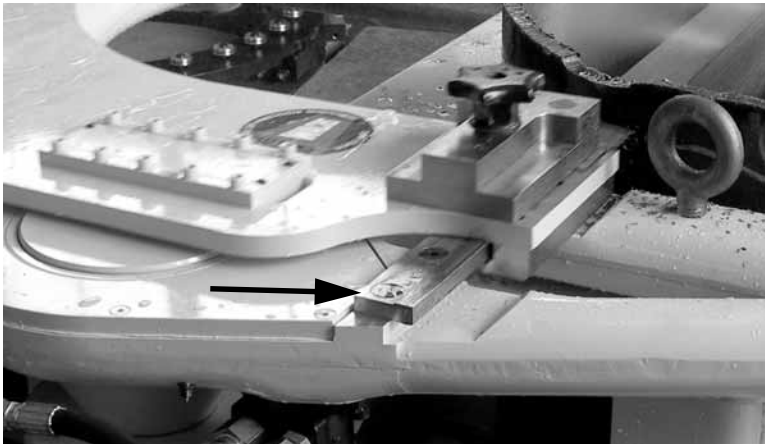


Figure 6-7. Grease the bow guide plates on both sides of the frame (one side shown).

Autoclamp Lubrication

- Grease the clamp wheel fitting on the autoclamp arm.
- Apply grease to the autoclamp rail with a brush or clean cloth.



Grease the autoclamp rail

Figure 6-8. Grease the fitting for the clamping wheel and apply grease to the autoclamp rail.



Chapter 7

Service and Repair

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The Goliath Guillotine does not have any user-serviceable parts. If the machine is not operating correctly, contact E.H. Wachs Company service for repair.

TROUBLESHOOTING

Refer to the troubleshooting procedures in Table 1.

In This Chapter

TROUBLESHOOTING

Table 1: Goliath Troubleshooting

Symptom	Potential Cause	Solution
Machine Loose on Pipe (Chain Clamp)	Clamp nut not tight	Re-torque chain tension nut
	Chain tensioner at max travel	Loosen tensioner and relocate chain hook to next tighter pin
Machine Loose on Pipe (Autoclamp)	Low clamp pressure	With machine stopped, re-energize clamp valve
	Low HPU pressure	Make sure system pressure from HPU is at least 2,000 psi
Cut Not Flat	Blade is dull or damaged	Replace with new blade
	Wrong blade	Replace with correct blade
	Blade is not tight	Tension blade and lock in place
	Feed rate too fast	Lower feed rate to one trip pin or slower speed on TCU
	Feed overload improper	Reduce spring pressure on feed lock pin
Machine Stalling	Cutter blade is binding	See procedures under “Cut Not Flat” above
	Low hydraulic system pressure	Make sure system pressure from HPU is at least 2,000 psi
	Slide ways are damaged	Inspect guide rods and ways for damage, debris, or lack of lubrication

Chapter 8

Parts List and Ordering Information

ORDERING INFORMATION

To place an order, request service, or get more detailed information on any E.H. Wachs products, call us at one of the following numbers:

U.S. 800-323-8185
International: 847-537-8800

You can also visit our Web site at:

www.ehwachs.com

Ordering Replacement Parts

When ordering parts, refer to the parts lists in this chapter. Please provide the part description and part number for all parts you are ordering.

Repair Information

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number

In This Chapter

ORDERING INFORMATION
DRAWINGS AND PARTS LISTS

- A description of the problem or the work to be done.

Before we perform any repair, we will estimate the work and inform you of the cost and the time to complete it.

Warranty Information

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs. Retain the owner's registration record and warranty card for your information.

Return Goods Address

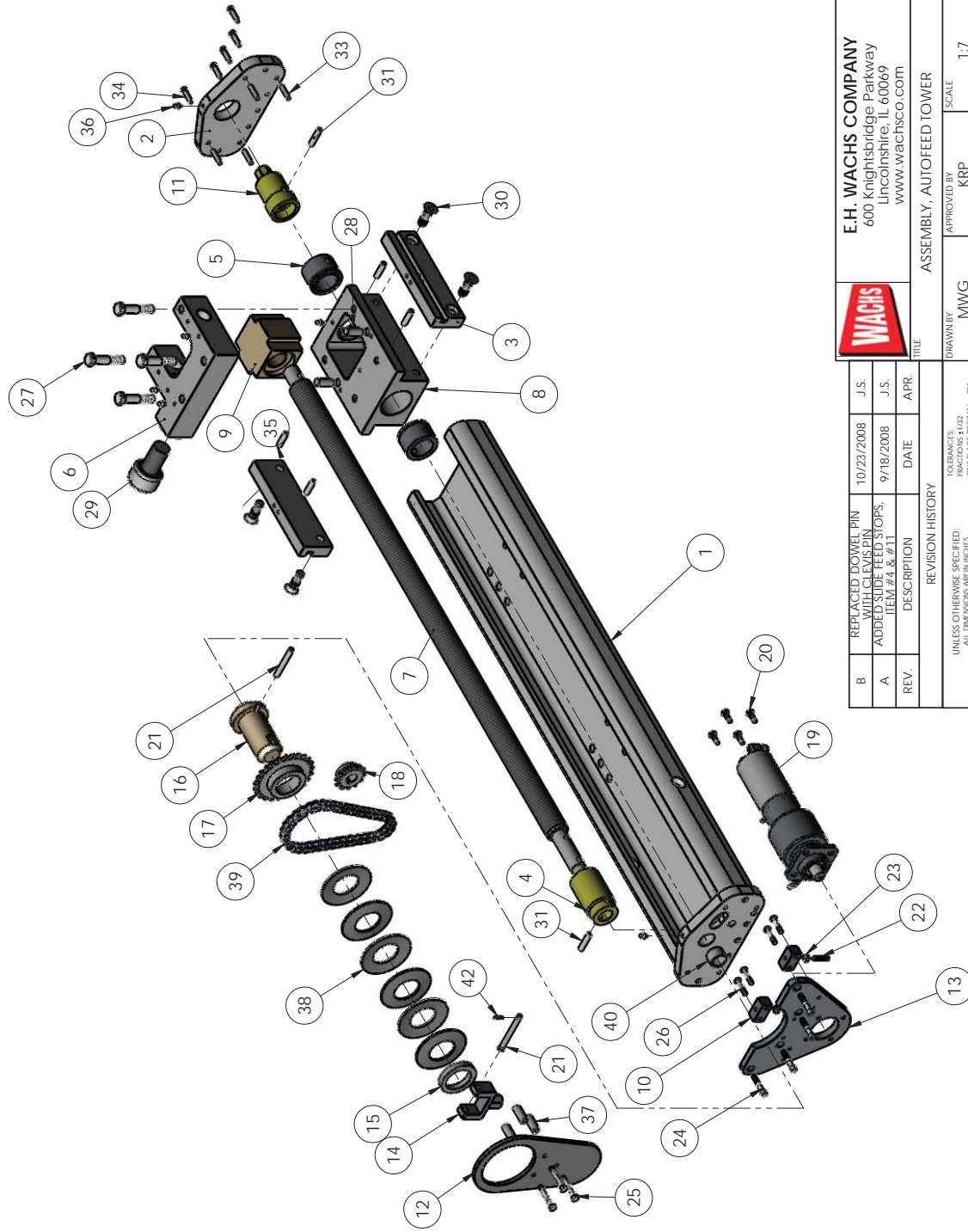
Return equipment for repair to the following address.

Wachs Subsea
15331 Vantage Parkway East
Houston, TX 77032 USA

DRAWINGS AND PARTS LISTS

The following pages include exploded view drawings with parts lists for all of the Goliath Guillotine components.

Item No.	Part Number	Description	Qty.
1	05-011-002	HOUSING, FEED	1
2	05-055-015	PLATE, FEED TOWER FRONT END	1
3	05-011-016	GIB, FEMALE FEED	2
4	P98-037-071	COLLAR, FEED SCREW - UPPER	1
5	98-037-042	RETAINER, WORM GEAR	2
6	98-037-047	MOUTIN, FEED SHAFT	1
7	98-037-848	SCREW, FEED	1
8	98-037-045	HOUSING, FEED SLIDE	1
9	P06-150-023	NUT, FEED	1
10	P06-150-040	SPACER, FEED DRIVE POSITIONING	2
11	P98-037-072	COLLAR, FEED SCREW - LOWER	1
12	P06-150-032	COVER, FEED CHAIN	1
13	P06-150-031	PLATE, FEED MOTOR MOUNT	1
14	P06-150-027	YOKE, FEED DRIVE	1
15	P06-150-028	RING, THRUST	1
16	P06-150-026	HUB, FEED SCREW DRIVE	1
17	P06-150-024	SPROCKET, FEED SCREW	1
18	P06-150-025	SPROCKET, MOTOR	1
19	06-150-401	ASSEMBLY FEED GEARBOX	1
20		HHCS, 1/4-20 x 3/4" LNG.	4
21		PIN, CLEVIS 5/16" DIA. X 3" LNG.	2
22		NUT, 1/4-28	2
23		SSS, 1/4-28 x 1-1/4" LNG.	2
24		SHCS, 1/4-20 x 1-1/2" LNG.	4
25		HHCS, 1/4-20 x 1-7/8" LNG.	3
26		BHCS, 1/4-20 x 1-1/4" LNG.	4
27	05-011-932	HHCS, 1/2-20 x 2-1/2" LNG.	4
28	05-011-908	PIN, 1/2" x 1-1/4" LNG. DOWEL	2
29	05-011-509	BEARING, CAM	1
30	05-011-926	FHCS, 1/2-20 x 1-1/2" LNG.	4
31	05-011-905	PIN, 5/16" x 1-1/2" LNG. DOWEL	1
32	05-011-917	PIN, 1/4" x 1-1/2" LNG. ROLL	1
33	05-011-946	PIN, DOWEL 1/2" DIA. X 1-1/4" LNG.	4
34	05-011-947	SHCS, 1/4-20 x 1" LNG.	5
35	05-011-904	PIN, 5/16" x 1-1/4" LNG. DOWEL	4
36	05-011-528	ZERK, GREASE	7
37	P06-150-039	SPACER, FEED CHAIN COVER	3
38	P06-150-034	SPRING, BELLVILLE	6
39		CHAIN W/ CONNECTING LINK	1
40	05-011-503	BEARING, SLEEVE	1
41	05-011-506	BEARING, THRUST	1
42		PIN, 1/8" x 3/4" LNG. ROLL	1



E.H. WACHS COMPANY
600 Knightsbridge Parkway
Lincolnshire, IL 60069
www.wachscsco.com

REV.	DESCRIPTION	DATE	APR.
B	REPLACED DOWEL PIN WITH CLEVIS PIN ADDED SLIDE FEED STOPS ITEM #4 & #11	10/23/2008	J.S.
A		9/18/2008	J.S.

REVISION HISTORY	
UNLESS OTHERWISE SPECIFIED:	TOLERANCES:
E.H. WACHS CO. WORKMANSHIP STANDARDS (W/ 17.01)	FRACTIONS 1/32
SHALL APPLY TO ALL ITEMS NOT SPECIFIED ON DRAWING.	ONE PLACE DECIMAL 1.015
DO NOT SCALE DRAWING.	THREE PLACE DECIMAL 1.005
	ANGULAR .415 MIN.

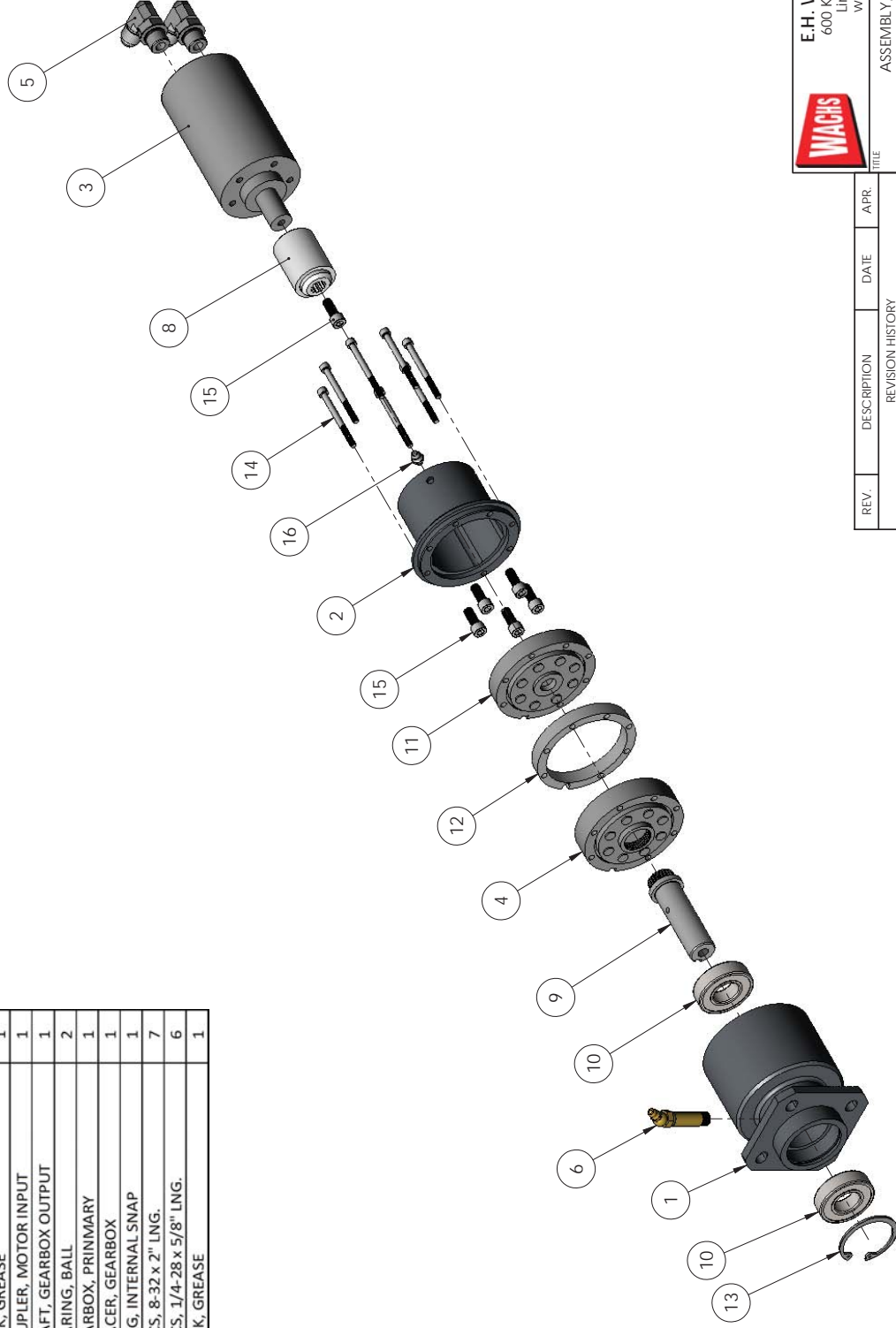
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MWG	KRP	1:7

DATE	DATE	SHEET
7-3-08	7-3-08	1 OF 1

SIZE	DWG. NO.	REV.
B	06-150-400	B

TITLE
ASSEMBLY, AUTOFEED TOWER

Item No.	Part Number	Description	Qty.
1	P06-052-150	HOUSING, FEED BOX OUTPUT	1
2	P06-052-159	HOUSING, FEED BOX INPUT	1
3	P06-150-038	MOTOR, FEED	1
4	11-103-00	GEARBOX, PLANETARY OUTPUT	1
5		FITTING, 3/8" NPT x 3/8" ORB x 90 DEG	2
6	90-500-04	ZERK, GREASE	1
7	P06-052-155	COUPLER, MOTOR INPUT	1
8	P06-150-030	SHAFT, GEARBOX OUTPUT	1
9	P06-150-035	BEARING, BALL	2
10	P06-150-036	GEARBOX, PRINMARY	1
11	P06-150-037	SPACER, GEARBOX	1
12		RING, INTERNAL SNAP	1
13		SHCS, 8-32 x 2" LNG.	7
14		SHCS, 1/4-28 x 5/8" LNG.	6
15	05-011-528	ZERK, GREASE	1



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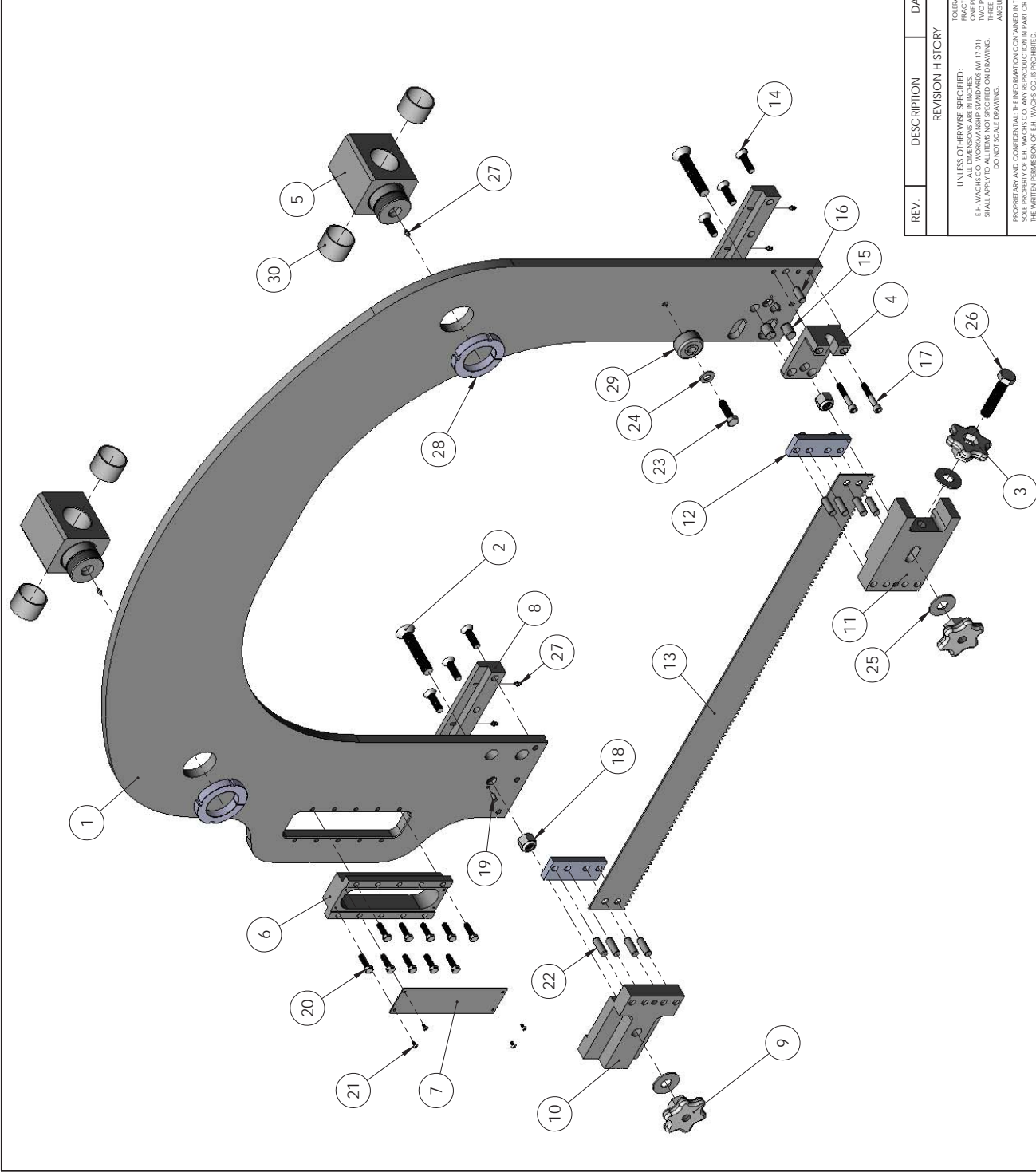
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TITLE			
ASSEMBLY, FEED GEARBOX			
DRAWN BY	APPROVED BY	SCALE	
MWG	KRP	1:3	
DATE	DATE	SHEET	
7-3-08	7-3-08	1 OF 1	
SIZE	DWG. NO.		REV.
B	06-150-401		

UNLESS OTHERWISE SPECIFIED:
FRACTIONS 1/16
ONE PLACE DECIMAL ±.015
TWO PLACE DECIMAL ±.005
THREE PLACE DECIMAL ±.002
SHALL APPLY TO ALL ITEMS NOT SPECIFIED ON DRAWING.
DO NOT SCALE DRAWING.
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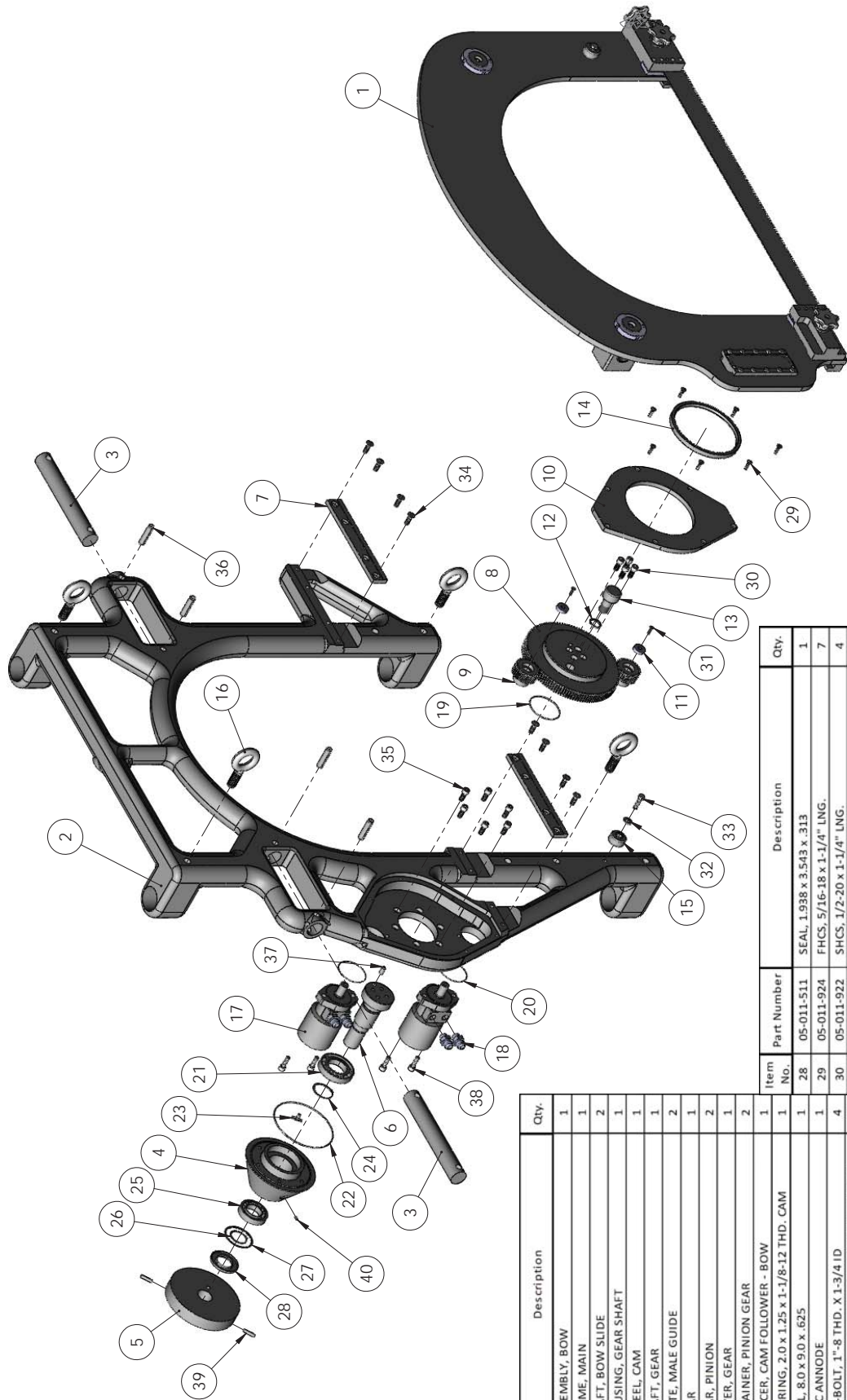
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1	90-037-012	FRAME, BOW	1
2	98-037-014	BOLT, BLADE CLAMP	2
3	98-037-015	KNOB, BLADE TENSION	1
4	98-037-017	GUIDE, TENSION CLAMP	1
5	98-037-023	BLOCK, BOW SLIDE	2
6	98-037-025	YOKE, BOW FEED	1
7	98-037-026	COVER, FEED YOKE	1
8	98-037-050	GUIDE, BOW - FEMALE	2
9	98-037-059	KNOB, BLADE CLAMP	2
10	05-011-018	CLAMP, BLADE PULL	1
11	05-011-019	CLAMP, BLADE TENSION	1
12	05-011-020	ADAPTER, BLADE	2
13	98-037-41X	BLADE, GOLIATH	1
14	05-011-927	FHCS, 1/2-13 x 1-3/4	6
15	05-011-913	PIN, 3/4" x 1" LNG. DOWEL	2
16	05-011-908	PIN, 1/2" x 1-1/4" LNG. DOWEL	1
17	05-011-919	SHCS, 3/8-16 x 2-1/4" LNG.	2
18	05-011-939	NUT, NYLOCK 3/4-10	2
19	05-011-903	PIN, 1/4 x 5/8 LNG. DOWEL	2
20	05-011-931	FHCS, 3/8-16 x 1-1/4	10
21	05-011-934	BHCS, 10-24 x 3/8	4
22	05-011-909	PIN, 1/2 x 1-1/2" LNG. DOWEL	8
23	05-011-941	FHCS, 1/2-13 x 1-3/4" LNG.	1
24	05-011-942	WASHER, 1/2" SAE	1
25	05-011-940	WASHER, 3/4"	3
26	05-011-933	FHCS-SS, 3/4-16 x 3-1/2" LNG.	1
27	05-011-528	ZERK, GREASE	6
28	05-011-512	NUT, 5/8 W. x 2.548-18 THD. LOCK	2
29	05-011-545	ANODE, ZINC	1
30	05-011-504	BEARING, 2" x 2-3/16" x 1-1/2" LG. SLEEVE	4



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	REVISION HISTORY UNLESS OTHERWISE SPECIFIED: FRACTIONS 1/16 ONE PLACE DECIMAL 1/16 E.H. WACHS CO. WORKMANSHIP STANDARDS (W 17.01) SHALL APPLY TO ALL ITEMS NOT SPECIFIED ON DRAWING. DO NOT SCALE DRAWING. ANGLE 45 MIN.		
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	DATE	7-28-08	KRP
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	SIZE	DWG. NO.	REV.
	B	06-150-402	1 OF 1

TITLE
 ASSEMBLY, BOW



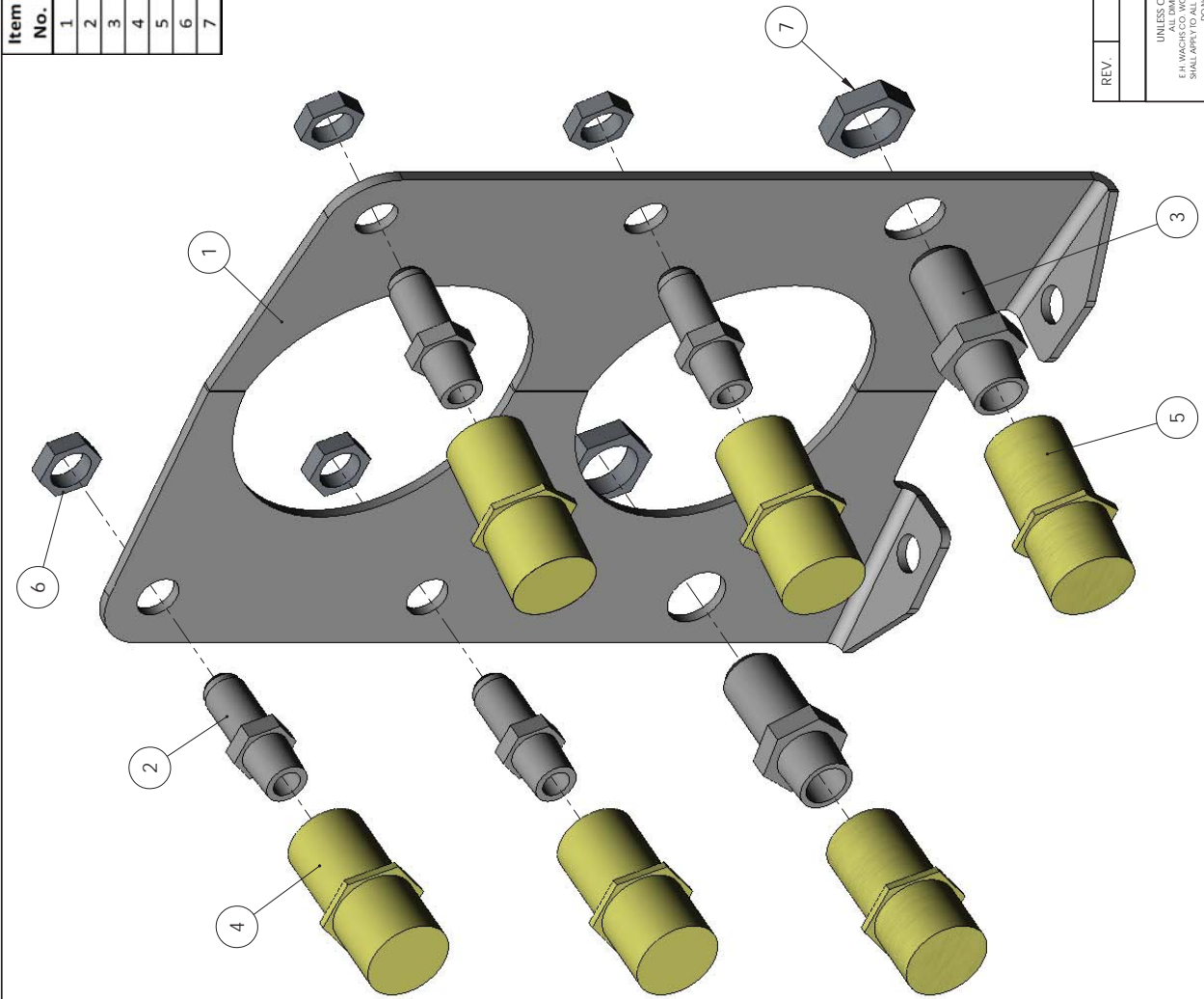
E.H. WACHS COMPANY
 600 Knightsbridge Parkway
 Lincolnshire, IL 60069
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REV.	DESCRIPTION	DATE	APR.	TITLE
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DRAWN BY	MWG	APPROVED BY	KRP	SCALE
DATE	9-5-08	DATE	9-5-08	SHEET
SIZE	B	DWG. NO.	06-150-403	REV.
				1 OF 1

REVISION HISTORY	
UNLESS OTHERWISE SPECIFIED:	FRACCTIONS 1/32
E.H. WACHS CO. WORKMANSHIP STANDARDS (W 17.01)	ONE PLACE DECIMAL ± 0.05
SHALL APPLY TO ALL ITEMS NOT SPECIFIED ON DRAWING.	THREE PLACE DECIMAL ± 0.05
DO NOT SCALE DRAWING.	ANGULAR ± 15 MIN.
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Item No.	Part Number	Description	Qty.
1	05-150-402	ASSEMBLY, BOW	1
2	98-037-011A	FRAME, MAIN	1
3	98-037-024	SHAFT, BOW SLIDE	2
4	98-037-031	HOUSING, GEAR SHAFT	1
5	98-037-B30	WHEEL, CAM	1
6	98-037-027	SHAFT, GEAR	1
7	98-037-049	PLATE, MALE GUIDE	2
8	98-037-028	GEAR	1
9	98-037-029	GEAR, PINION	2
10	98-037-032	COVER, GEAR	1
11	97-009-07	RETAINER, PINION GEAR	2
12	98-037-056	SPACER, CAM FOLLOWER - BOW	1
13	05-011-509	BEARING, 2.0 x 1.25 x 1-1/8-12 THD. CAM	1
14	05-011-510	SEAL, 8.0 x 9.0 x .625	1
15	05-011-545	ZINC ANODE	1
16	05-011-522	EYE-BOLT, 1"-8 THD. X 1-3/4 ID	4
17	05-011-500	MOTOR, 146cm/r x 1" Shaft x 7/8-14Port x 2Blt	2
18	05-011-533	FITTING, STR. 1 1/16-12 JIC (M) x 7/8-14 ORB (M)	4
19	05-011-518	O-RING 3-3/4 ID x 1/8 STD.	1
20	05-011-517	O-RING 3-1/4 ID x 3/32 STD.	2
21	05-011-508	BEARING, 2.3622 x 4.3307 BALL	1
22	05-011-519	O-RING 7-1/2 ID x 1/8 STD.	1
23	05-011-546	1/8" NPT BRASS DRAIN COCK	1
24	05-011-516	RING, 2.375 x .078 EXTERNAL RETAINING	1
25	05-011-507	BEARING, 1.9685 x 3.5433 BALL	1
26	05-011-515	RING, 1.9669 x .062 EXTERNAL RETAINING	1
27	05-011-514	RING, 3.543 x .061 INTERNAL RETAINING	1
28	05-011-511	SEAL, 1.9988 x 3.543 x .313	1
29	05-011-924	FHCS, 5/16-18 x 1-1/4" LNG.	7
30	05-011-922	SHCS, 1/2-20 x 1-1/4" LNG.	4
31	05-011-923	FHCS, 1/4-20 x 7/8" LNG.	2
32	05-011-942	WASHER, 1/2" SAE	1
33	05-011-941	HHCS, 1/2-13 x 1-3/4" LNG.	1
34	05-011-925	FHCS, 1/2-13 x 1-1/2" LNG.	8
35	05-011-920	SHCS, 1/2-13 x 1-1/4" LNG.	6
36	05-011-918	PIN, 3/4" x 3" LNG. ROLL	4
37	05-011-907	PIN, 1/2" x 1" LNG. DOWEL	1
38	05-011-921	PIN, 1/2-13 x 1-1/2" LNG.	4
39	05-011-906	PIN, 3/8" x 1-1/2" LNG. DOWEL	2
40	05-011-528	FITTING, 1/4-28 MALE GREASE (STRAIGHT)	1

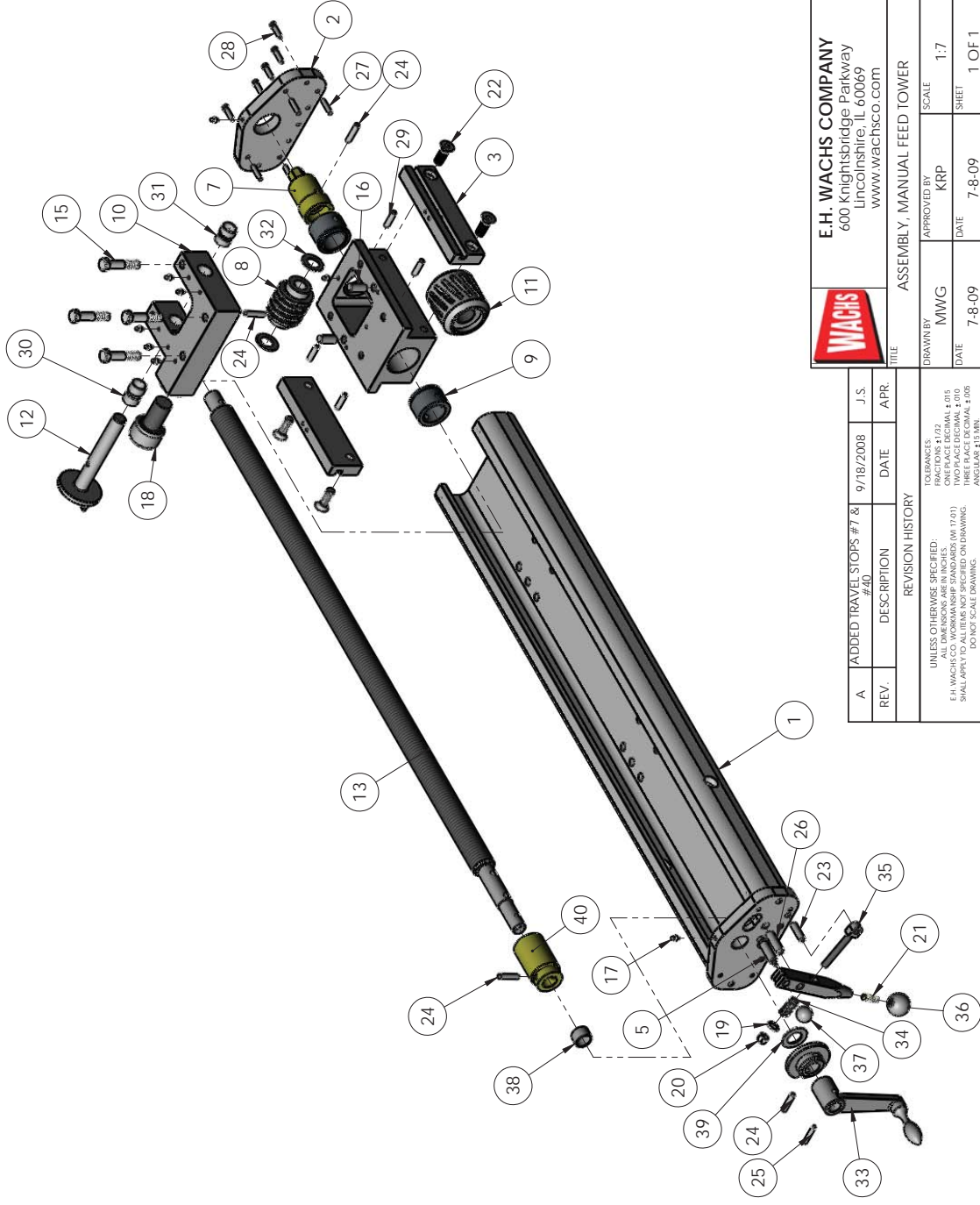
Item No.	Part Number	Description	Qty.
1	06-052-015	PLATE, BULKHEAD MOUNTING	1
2		FITTING, BULKHEAD - 8 JIC(M) x -8 NPT (M)	4
3		FITTING, BULKHEAD - 12 JIC(M) x -12 NPT(M)	2
4		QUICK DISCONNECT, 1/2" NPT(F) x 3/4" BODY MALE W/ FLANGE	4
5		QUICK DISCONNECT, 3/4" NPT(F) x 3/4" BODY MALE W/FLANGE	2
6		NUT, BULKHEAD - 8	4
7		NUT, BULKHEAD - 12	2



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600 Knightsbridge Parkway
Lincolnshire, IL 60069
www.wachscsco.com

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	REVISION HISTORY UNLESS OTHERWISE SPECIFIED: FRACTIONS 1/16 ONE PLACE DECIMAL ±.015 TWO PLACE DECIMAL ±.005 E.H. WACHS CO. WORKMANSHIP STANDARDS (W/ 17.01) SHALL APPLY TO ALL ITEMS NOT SPECIFIED ON DRAWING. DO NOT SCALE DRAWING. ANGULAR ±.15 MIN.			DRAWN BY MWG DATE 7-8-08	ASSMBLY, BULKHEAD APPROVED BY KRP DATE 7-8-08 SCALE 1:2 SHEET 1 OF 1
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Item No.	Part Number	Description	Qty.
1	05-011-002	FEED HOUSING	1
2	05-011-015	PLATE, FEED TOWER FRONT END	1
3	05-011-016	GIB, FEMALE FEED	2
4	98-037-035	LEVER, FEED CONTROL	1
5	98-037-036	PIN, FEED LOCK-OUT	1
6	98-037-037	CAM, FEED OVERLOAD	1
7	98-037-072	COLLAR, FEED SCREW - LOWER	1
8	98-037-039	BUSHING, FEED SCREW	1
9	98-037-040	WORM, FEED	1
10	98-037-042	RETAINER, WORM GEAR	2
11	98-037-047	MOUNT, FEED SHAFT	1
12	98-037-B41	GEAR, WORM FEED	1
13	98-037-B44	SHAFT, FEED	1
14	98-037-B48	SCREW, FEED	1
15	98-037-45	HOUSING, FEED SLIDE	1
16	05-011-932	HHCS-SS, 1/2-20 x 2-1/2" LNG.	4
17	05-011-908	PIN, 1/2" x 1-1/4" LNG. DOWEL	2
18	05-011-528	FITTING, 1/4-28 MALE GREASE (STRAIGHT)	8
19	05-011-509	BEARING, 2.0 x 1.25 x 1-1/8-12 THD. CAM	1
20	05-011-943	WASHER, 3/8" SAE	1
21	05-011-935	NUT, 3/8-16 NYLOCK	1
22	05-011-929	SSS, 3/8-16 x 1-1/4" LNG.	1
23	05-011-926	FHCS-SS, 1/2-20 x 1-1/2" LNG.	4
24	05-011-906	PIN, 3/8" x 1-1/2" LNG. DOWEL	1
25	05-011-905	PIN, 5/16" x 1-1/2" LNG. DOWEL	3
26	05-011-917	PIN, 1/4" x 1-1/2" LNG. ROLL	2
27	05-011-910	PIN, 1/2 x 1-1/2" LNG. DOWEL	1
28	05-011-946	PIN, 1/4 x 1-1/4" LNG. DOWEL	4
29	05-011-947	SHCS, 1/4-20 x 1" LNG.	5
30	05-011-904	PIN, 5/16" x 1-1/4" LNG. DOWEL	4
31	05-011-502	BEARING, 7/8" x 1" x 5/8" LNG. SLEEVE	2
32	05-011-501	BEARING, 7/8" x 1" x 1/2" LNG. SLEEVE	2
33	05-011-505	BEARING, .875 x 1.5 x .0585 THK. THRUST	2
34	04-045-00	HANDLE, FEED (MODEL "D")	1
35	05-011-520	SPRING, .60 OD x 2.500 LG. x .085	1
36	05-011-521	SWING-BOLT, 3/8-16 x 3-1/2" LNG.	1
37	05-011-523	KNOB, 1-1/8 x 1-7/16 x 3/8-16 THD. BLACK	1
38	05-011-524	KNOB, 1" x 1-1/4-20 THD. BLACK.	1
39	05-011-503	BEARING, 1" x 1-1/8" x 3/4" LNG. SLEEVE	1
40	98-037-071	COLLAR, FEED SCREW - UPPER	1



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REV. A	ADDED TRAVEL STOPS #7 & #40	DATE	9/18/2008	J.S.
REV.	DESCRIPTION	DATE	APR.	

TITLE		ASSEMBLY, MANUAL FEED TOWER	
DRAWN BY	MW/G	APPROVED BY	KRP
DATE	7-8-09	DATE	7-8-09

TOLERANCES UNLESS OTHERWISE SPECIFIED:		SCALE	1:7
FRACCTIONS	1/32		
ONE PLACE DECIMAL	±.015		
TWO PLACE DECIMAL	±.005		
THREE PLACE DECIMAL	±.005		
ANGULAR	±15 MIN.		
DO NOT SCALE DRAWING.			

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SIZE	B	DWG. NO.	06-150-405	REV.	A
SHEET	1 OF 1				