

# **OPERATION & MAINTENANCE MANUAL**

## **WASTEWATER TREATMENT PLANT IMPROVEMENTS WENATCHEE, WA**

### **SPECIFICATION SECTION 15115 GH-44 SLIDE GATES (SG-12003A & B) GH-44NRS SLIDE GATES (SG-12005A & B) MODEL-1000 PORTABLE ELECTRIC DRILL OPERATOR**

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KENNEWICK, WA 99336  
509-586-1104  
WWW.APOLLO-GC.COM**

**OWNER:  
CITY OF WENATCHEE  
129 S. CHELAN AVE  
PO BOX 519  
WENATCHEE, WA 98807-0519**

**ENGINEER:  
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2805 ST. ANDREWS LOOP  
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GHI NO: 11-1001  
DEC 2012

# TABLE OF CONTENTS

INTRODUCTION	1
WARRANTY	2
AUTHORIZED PARTS AND SERVICE	2
OPERATOR SAFETY	3
SPARE PARTS LIST	3
PARTS LIST	3
SPECIAL TOOLS	3
RECEIVING SHIPMENT	4
STORAGE AND HANDLING	4
INSTALLATION OF ANCHOR BOLTS	5
INSTALLATION OF EMBEDDED GATES	6
ADJUSTMENT OF GATES WITH P-SEALS	7
INSTALLATION OF PEDESTAL AND OPERATOR ON OPERATING FLOOR	8
MOUNTING WALL BRACKETS AND STEM GUIDES	9
INSTALLATION OF STEMS	9
INSTALLATION OF STOP NUTS	9
INSTALLATION OF CLEAR PLASTIC STEM COVERS	10
ATTACHING MYLAR INDICATORS TO CLEAR PLASTIC STEM COVERS	10
SLIDE GATE INSTALLATION CHECKLIST AND INITIAL OPERATING INSTRUCTIONS	11
SLIDE GATE TROUBLESHOOTING	12
EQUIPMENT MAINTENANCE	13
LUBRICATION CHART	14
SUPPORT EQUIPMENT-PORTABLE ELECTRIC OPERATOR	15
INSTRUCTIONS FOR USE OF THE MODEL 1000 PORTABLE OPERATOR	16
TORQUE/GUARD SAFETY CLUTCH OPERATION AND MAINTENANCE	17
DRAWINGS	18







Lubrication Summary

Equipment Description: <b>SLIDE GATES</b>	Project Equip. Tag No(s). <b>SG-12003A &amp; B</b>
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Lubricant Point: **OPERATORS**

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
	1	<b>MOBILGREASE</b>	<b>SPECIAL</b>		
2	<b>LUBRIPLATE</b>	<b>#630-AA</b>			
3	<b>CHEVRON</b>	<b>R.M.P HEAVY DUTY GREASE EPNLG12</b>			
4	<b>UNOCAL</b>	<b>MEGAPLEX XD-2</b>			
5					

Lubricant Point: **STEMS**

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
	1	<b>LUBRIPLATE</b>	<b>#630-2</b>		
2	<b>SHELL</b>	<b>ALVANIA 2-EP</b>			
3	<b>MOBILOX</b>	<b>2-EP</b>			
4	<b>VALVOLINE</b>	<b>VAL-LITH 2-EP</b>			
5	<b>CHEVRON</b>	<b>ULTRA DUTY GREASE EP-2</b>			
6	<b>UNOCAL</b>	<b>UNOBA EP-2</b>			

Lubricant Point

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer	Product	AGMA #	SAE #	ISO
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Lubrication Summary

Equipment Description: **SLIDE GATES**

Project Equip. Tag No(s). **SG-12005A & B**

Lubricant Point: **OPERATORS**

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1	MOBILGREASE		SPECIAL		
2	LUBRIPLATE		#630-AA			
3	CHEVRON		R.M.P HEAVY DUTY GREASE EPNL12			
4	UNOCAL		MEGAPLEX XD-2			
5						

Lubricant Point: **STEMS & LIFT NUTS**

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1	LUBRIPLATE		#630-2		
2	SHELL		ALVANIA 2-EP			
3	MOBILLOX		2-EP			
4	VALVOLINE		VAL-LITH 2-EP			
5	CHEVRON		ULTRA DUTY GREASE EP-2			
6	UNOCAL		UNOBA EP-2			

Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Equipment Data and Spare Parts Summary

Project Name: <b>WASTEWATER TREATMENT PLANT IMPROVEMENTS</b>		Specification Section: 15115
Equipment Name <b>MODEL 1000 TRIPOD MOUNTED PORTABLE ELECTRIC DRILL OPERATOR</b>		Year Installed: 2012
Project Equipment Tag No(s): <b>N/A</b>		
Equipment Manufacturer: <b>GOLDEN HARVEST, INC.</b>		Project/ Order No. <b>11-1001</b>
Address: <b>11944 WESTAR LANE BURLINGTON, WA 98233</b>		Phone: <b>360-757-4334</b>
Fax: <b>360-757-1135</b>	Web Site: <b>WWW.GOLDENHARVESTINC.COM</b>	E-mail: <b>SALES@GOLDENHARVESTINC.COM</b>
Local Vendor/Service Center: <b>GOLDEN HARVEST, INC.</b>		
Address <b>11944 WESTAR LANE BURLINGTON, WA 98233</b>		Phone <b>360-757-4334</b>
Fax <b>360-757-1135</b>	Web Site <b>WWW.GOLDENHARVESTINC.COM</b>	E-mail <b>SALES@GOLDENHARVESTINC.COM</b>

MECHANICAL NAMEPLATE DATA

Equip. <b>PORTABLE ELECTRIC DRILL MOTOR OPERATOR</b>		Serial No. <b>NO SERIAL OR TAG NUMBER</b>			
Make <b>GOLDEN HARVEST (GH)</b>		Model No. <b>MODEL 1000</b>			
ID No. <b>N/A</b>	Frame No. <b>N/A</b>	HP <b>N/A</b>	RPM <b>N/A</b>	Cap. <b>N/A</b>	
Size <b>35LBS, 30-54"</b>	TDH <b>N/A</b>	Imp. Sz. <b>N/A</b>	CFM <b>N/A</b>	PSI <b>N/A</b>	
Other:					

ELECTRICAL NAMEPLATE DATA

Equip. <b>N/A</b>		Serial No. <b>N/A</b>						
Make <b>N/A</b>		Model No. <b>N/A</b>						
ID No. <b>N/A</b>	Frame No. <b>N/A</b>	HP <b>N/A</b>	V. <b>N/A</b>	Amp. <b>N/A</b>	HZ <b>N/A</b>	PH <b>N/A</b>	RPM <b>N/A</b>	SF <b>N/A</b>
Duty <b>N/A</b>	Code <b>N/A</b>	Ins. Cl. <b>N/A</b>	Type <b>N/A</b>	NEMA <b>N/A</b>	C Amb. <b>N/A</b>	Temp. Rise <b>N/A</b>	Rating <b>N/A</b>	
Other:								

SPARE PARTS PROVIDED PER CONTRACT

Part No.	Part Name	Quantity
	<b>Golden Harvest Inc. doesn't have any "high wear" parts on this equipment, therefore, no spare parts are recommended.</b>	

RECOMMENDED SPARE PARTS

Part No.	Part Name	Quantity
	<b>Golden Harvest Inc. doesn't have any "high wear" parts on this equipment, therefore, no spare parts are recommended.</b>	





Lubrication Summary

Equipment Description: <b>PORTABLE ELECTRIC OPERATOR</b>	Project Equip. Tag No(s). N/A
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Lubricant Point: **OPERATORS**

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1	<b>MOBILGREASE</b>		<b>MOBILUX 2</b>		
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Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
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Lubricant Point

Lubricant Type	Manufacturer		Product	AGMA #	SAE #	ISO
	1					
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(Feb 1991; Revised Oct 2001, Revised Nov 2007)  
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## INTRODUCTION

Golden Harvest, Inc. has developed Golden Gates™, a complete line of aluminum and stainless steel gates made for worldwide distribution. These products, based on widespread experience in all types of environments, are the results of extensive research, field testing, and analysis.

Golden Harvest, Inc.'s Golden Gates™ Operation and Maintenance Manual was created for all personnel (engineers, contractors, operators, and installers) who will be involved in operating, maintaining, and installing this equipment. This manual contains Golden Harvest, Inc.'s Golden Gates™ recommended procedures for handling, storage, installation, adjustment, and initial operation for the related equipment and operating mechanisms.

Every precaution is taken at the factory to ensure that superior quality equipment is shipped. Therefore, we cannot be held accountable for damage caused by vandalism, negligence after shipping, or improper installation of the equipment. If appropriate care and accuracy are observed in the field when installing Golden Harvest, Inc. Golden Gates™ they will operate as designed at optimum efficiency.

## WARRANTY

### LIMITED WARRANTY

Golden Harvest, Inc. warrants its gates against defects in material and workmanship for one full year from date of acceptance by owner. The warranty can only be enforced by the original purchaser. During the warranty period, the gates will be repaired or replaced at **GOLDEN HARVEST, INC.'S** option and at no cost to the purchaser. Measure of damage is the original purchase price of the defective material only. Any claim for defects in material and/or workmanship shall be in writing and within ten (10) days of the inspected defect. No charges for labor or expense required to remove or replace defective material or for any consequential damages will be allowed.

## AUTHORIZED PARTS AND SERVICE

For service, parts, and/or warranty repair, please contact:

Golden Harvest, Inc

PO Box 287

Burlington, WA 98233

Phone: (360) 757-4334

Fax: (360) 757-1135

**Please reference the Golden Harvest Job #11-1001 in all correspondence regarding this job.**

#### OPERATOR SAFETY

Golden Harvest Inc. does not have specific instructions beyond basic plant safety practices for its products.

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#### SPARE PARTS LIST

Golden Harvest Inc. doesn't have any "high wear" parts on this equipment, therefore, no spare parts are recommended.

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#### PARTS LIST

The parts list for each gate is located on the corresponding drawing.

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#### SPECIAL TOOLS

No special tools are required to install or maintain Golden Harvest gates.

## RECEIVING SHIPMENT

All individually shipped parts, assemblies, and equipment are listed on a packing list. These should be inspected and counted immediately upon arrival. Should a deficiency occur, please notify Golden Harvest, Inc. immediately. We cannot be held responsible for any shortages reported more than 30 days after receipt of shipment. Special attention should be taken in counting and safely storing all bolts, nuts, and other small items which are often misplaced or lost at job sites.

Unless your contract with Golden Harvest, Inc. states otherwise, all parts and equipment are shipped F.O.B. factory. Therefore, if any equipment or parts are damaged in transit, it is the purchaser's responsibility to file claims with the transportation company. For assistance in filing any claim and/or replacing equipment, please contact Golden Harvest, Inc. at 1-800-338-6238.

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## STORAGE AND HANDLING

All Golden Harvest, Inc., Golden Gates'™ equipment and parts are durably constructed. However, there are precision machined seats and surfaces which require special attention when handling, storing, and installing. Although all equipment and parts are of sturdy design, it is possible to warp frames, heads, stems, and other parts and equipment.

To avoid these problems we recommend the following:

### DO NOT DISASSEMBLE FOR STORAGE OR INSTALLATION.

1. Always brace, taking precautions not to harm the stem threads.
  2. Warehouse equipment on a flat, clean, dry surface to prevent distortion.
  3. Do not stack equipment without proper bracing and covering.
  4. Handle all equipment and parts like you would any other precision machinery.
-

## INSTALLATION OF ANCHOR BOLTS

Golden Harvest, Inc. furnishes type 304-316 stainless steel anchor studs as required for the project. Adhesive is the responsibility of the contractor. Golden Harvest Inc.'s anchor bolt design calculations are based on either the Hilti HIT-RE 500 SD adhesive anchoring system or the Ramset Epcon series adhesive. Refer to drawing for recommended adhesive.

## UPPER GATE FRAME ANCHOR BOLTS:

Anchor bolts are required to support the upper frame members. These anchor bolts are provided with double nuts so that upper gate frame members can be clamped in position.

## INSTALLATION OF EMBEDDED GATES

### NOTES

- Be sure gate frames are installed plumb and straight. Failure to do so will impair smooth operation and cause excessive leakage.
- Any grout on seals or head passing through the seal will damage the seal and cause leakage.

### INSTALLATION OF EMBEDDED GATES:

1. The frame provided for the gates are an embedment type and as such, need to be carefully set into the contractor supplied blockouts.
2. Place the braced frame assembly into position. In the blockout: Blockout dimensions are given on installation drawings.
3. Add support to the frame on both sides, with adequate blocking placed horizontally between the sides of the frame. The frame must be well supported to prevent distortion that will cause leakage and binding of the gate head when being installed or removed.
4. Some frames will require the addition of top rail sections. A joint plate with pre-prepped ends is ready for infield welds where this condition exists. Necessary pieces are marked for easy match up.
5. When two gates are side by side sharing a common blockout, they may be tied together utilizing the concrete anchoring straps if needed for proper support and alignment.
6. After the guide frame is mounted plumb and straight, fill the void between gate frame and concrete wall with non-shrink grout, being careful to keep any grout spillage off of seals.
7. After grouting the frame in place the surrounding gate frame, head and seals should be checked for grout splatter and cleaned as required.

## ADJUSTMENT OF GATES WITH P-SEALS

ADJUSTING: Check the clearance between the seal and the head following installation with a .002 feeler gauge. Gauge should not pass at any point around the seal perimeter.

SPECIAL INSTALLATION NOTE: Any dual operated or wide (60" or over) weir or slide gate 'P' seals are to be adjusted after installation of gate to wall.

### TO ADJUST P-SEAL:

1. Loosen P-Seal retainer bolts.
2. Force P-Seal retainer and P-Seal against head.
3. Tighten P-Seal retainer bolts.

### REPLACEMENT OF P-SEALS:

To replace worn or damaged P-Seals

1. Remove P-Seal retainer bolts.
2. Remove P-Seal retainer and P-Seal.
3. Place new P-Seal on spigot.
4. Place P-Seal retainer over P-seal tail.
5. Replace P-Seal retainer bolts.
6. Force P-Seal retainer and P-Seal against gate head and tighten P-Seal retainer bolts.

## INSTALLATION OF PEDESTAL AND OPERATOR ON OPERATING FLOOR

### NOTES

- After assembling stem, be sure to screw bottom stop nut onto stem.
- In the event that your pedestal attaches to a metal surface rather than a concrete floor, shims may be required in lieu of the leveling nuts mentioned in step 5.

### INSTALLATION

1. Place a nut on each anchor bolt and run down to operating floor.
2. Lower pedestal over stem and onto anchor bolts to approximately one inch from floor.
3. Carefully lower the lift unit over the upper threaded portion of stem engaging the threads of the lift unit and stem.
4. Turn the crank or handwheel to lower the lift onto the base of pedestal, align operator and pedestal mounting holes. Use bolts and nuts provided to secure lift to pedestal platform. If a spacer ring is supplied with pedestal, do not discard; it is the support surface for thrust bearings.
5. Using the leveling nuts under the base of the pedestal for adjustment, align center line of lift nut until it is parallel with the center line of the stem. Tighten top nuts on anchor bolts and grout void under pedestal.

## MOUNTING WALL BRACKETS AND STEM GUIDES

1. Place anchor bolts for wall brackets and stem guides as shown on installation drawings.
2. Check for proper alignment of wall brackets, stem guides, and gate.
3. Place wall brackets and stem guide brackets on anchor bolts and tighten nuts. Top surface of brackets must be aligned perpendicular with stem and stem must be near the center of stem slot.
4. Install stem guide bushings on stem guide brackets with the stainless steel bolts provided. If a base plate stem guide is required be sure to insert it between wall bracket and pedestal base.

## INSTALLATION OF STEMS

NOTE: When required, stems are shipped with thrust nuts and stem couplings attached.

1. After gate has been mounted, lower proper stem section through the stem guide on top of gate yoke.
2. When a thrust nut is used, place it in the stem pocket. Thread or place the stem into the thrust nut until the stem is flush with bottom of nut. Tighten set screws or place bolts through holes in stem block and stem. When an aluminum or stainless steel stem pocket is used instead of a thrust nut, place stem in pocket and place bolts through the angles and stem and attach nuts.
3. If stems are in more than one piece, stems must be installed in their proper order from bottom to top. The end of each stem section and stem coupler are match marked to insure correct installation.

## INSTALLATION OF STOP NUTS

IMPORTANT: If bottom stop nut is required it must be ran down on the stem prior to mounting operator.

1. After lift installation and gate is in the fully closed position and wedges adjusted (if required), run stop nut down on the top of the projecting stem until firm contact is made with the top of the lift nut. Mark stem with set screw, back stop nut off and drill stem 1/8" deep. Reposition collar and tighten stop nut set screw.
2. With gate in full open position place bottom stop nut (if required) against the upward stop. Mark stem with set screw and drill as described above.

## INSTALLATION OF CLEAR PLASTIC STEM COVERS

NOTE: Clear plastic stem covers have drilled vent holes; make sure this end is up.

1. When clear plastic stem covers are used care must be taken not to scratch or break cover. Covers are marked to match gate. Check to make sure cover is approximately 6" longer than gate height.
2. A threaded PVC adaptor is provided. Sealant (Bostik 1000 provided) should be used on threads. Screw adaptor into receiver on top of lift housing. Place a bead of sealant (Bostik 1000 provided) into the receiving end of the adaptor. Be sure stem cover is plum. Place a bead of sealant (Bostik 1000 provided) in the top cap and install on the top end of stem cover.

## ATTACHING MYLAR INDICATORS TO CLEAR PLASTIC STEM COVERS

After lift and stem cover has been properly installed, the gate adjusted for proper seating, and the stop nuts are set and locked, the calibrated indicator must be installed.

1. Clean plastic stem cover.
2. Graduated, self-adhesive mylar tape is provided to indicate gate position.
3. Indicate on plastic stem cover where top of stem comes when gate is in closed position.
4. Remove protective coating from the mylar tape and smoothly apply to plastic stem cover.

## SLIDE GATE INSTALLATION CHECKLIST AND INITIAL OPERATING INSTRUCTIONS

After installing slide gate and before initial operation, please check the following:

1. Check guide frame for proper alignment.
2. Check to make sure stem guides and brackets are properly installed and securely fastened.
3. Clean and lubricate stem threads.
4. Clean the gate slide, guides, seals and invert of all foreign material.
5. If P-seals are used, clean contact area and adjust seal.
6. Adjust stop nut to within 1/16" of the top of lift nut and lock in place.
7. Install stem cover if required.
8. If gate does not operate smoothly or shows excess leakage, see SLIDE GATE TROUBLESHOOTING SECTION for remedy.

## SLIDE GATE TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
HARD TO OPERATE	Warped or distorted guides	<ol style="list-style-type: none"> <li>1. Loosen anchor bolt nuts</li> <li>2. Shim gate to true plane</li> <li>3. Place non-shrink grout between guides and wall</li> </ol>
	Foreign material in guide grooves	Remove foreign material from guide grooves
	Dry or dirty stem threads	Clean thoroughly and grease with recommended lubricant
	Gates with dual stems: Head operating unevenly	<ol style="list-style-type: none"> <li>1. Disconnect couplings on interconnecting shaft</li> <li>2. Rotate hoist until gate head is level.</li> <li>3. Reconnect couplings</li> </ol>
LEAKAGE—SIDES	Warped or distorted guides	<ol style="list-style-type: none"> <li>1. Loosen anchor bolt nuts</li> <li>2. Shim gate to true plane</li> <li>3. Place non-shrink grout between guides and wall</li> </ol>
	Foreign material wedged between head and guide	Remove foreign material from guides
	P-seal out of adjustment	<ol style="list-style-type: none"> <li>1. Loosen seal retainer bolts and force seal out until contact with head</li> <li>2. Tighten bolts</li> </ol>
LEAKAGE—BOTTOM OF GATE	Foreign material on or around seal	Remove foreign material
LEAKAGE—TOP OF GATE	Over tightening operator in closed position	<ol style="list-style-type: none"> <li>1. Limit operator force to 40 lbs of pull</li> <li>2. Make sure stop nut is properly installed</li> </ol>

EQUIPMENT MAINTENANCE

PART	RECOMMENDED MAINTENANCE	RECOMMENDED SCHEDULE
<b>GATES</b>	No maintenance other than periodic cleaning and operation of the sluice or slide gates is required.	<p>QUARTERLY</p> <p>Gates should be operated every three months.</p>
<b>OPERATORS</b>	All fittings on manual operators should be lubricated with a small amount of heavy duty grease. Refer to Lubrication Chart for recommended greases.	BIANNUALLY
<b>OPERATING STEMS</b>	To ensure proper operation and life of operating stems and lift nuts, it is <b>VERY IMPORTANT THAT OPERATING STEMS ARE CLEANED AND GREASED EVERY SIX MONTHS</b> . To help keep stem and lift nuts clean, the use of stem covers are recommended. Refer to Lubrication Chart for recommended greases.	BIANNUALLY
<b>NON-RISING STEM GATES</b>	<p>Because non-rising stem lift nuts are normally submerged in water or sewage, the stem threads on the stem may become coated with grit. This will cause excessive wear on stem threads and lift nut. Therefore, the following maintenance program is required:</p> <ol style="list-style-type: none"> <li>1. The stem and lift nut must be kept clean and greased.</li> <li>2. The lift nut should be removed once a year and inspected for wear.</li> <li>3. If excessive wear is evident the lift nut should be replaced.</li> </ol>	ANNUALLY

LUBRICATION CHART

PART	RECOMMENDED GREASES	RECOMMENDED SCHEDULE
<b>OPERATORS</b>	Mobilgrease Special* Lubriplate #630-AA* Chevron R.M.P. Heavy Duty Grease EPNLGI2* Unocal Megaplex XD-2*	ANNUALLY  All fittings on manual operators should be lubricated with a <b>small</b> amount of heavy duty grease.
<b>STEMS</b>	Lubriplate #630-2* Shell Alvania 2-EP* Mobilox 2-EP* Valvoline Val-Lith 2-EP* Chevron Ultra Duty Grease EP-2* Unocal Unoba EP-2*	BIANNUALLY  To ensure proper function and life of operating stems and lift nuts, it is <b>VERY IMPORTANT THAT OPERATING STEMS ARE CLEANED AND GREASED EVERY SIX MONTHS</b> . To help keep stem and lift nuts clean, the use of stem covers are recommended.

\*These greases are not considered food grade; if food grade grease is required use any high quality food grade grease intended for use in potable water.

## SUPPORT EQUIPMENT-PORTABLE ELECTRIC OPERATOR

The Golden Harvest Model 1000 Portable Electric Gate Operator (1000 P.O.) consists of a heavy duty electric drill, an overload release clutch, and a support tripod. Safe operation requires the proper use and maintenance of all components. The operator is designed specifically for use with Golden Harvest crank-operated manual gate actuators and should not be used for other applications.

### SAFETY WARNINGS:

1. Do not seat or unseat a gate with the 1000 P.O. Use the crank to seat or unseat the gate.
2. Do not operate the 1000 P.O. near flammable liquids or in gaseous or explosive atmospheres.
3. Do not expose the 1000 P.O. to rain or use in damp or wet environments.
4. The 1000 P.O. should be plugged into a properly grounded 3-pole electrical receptacle. Use ground fault-interrupter protected circuits.
5. If extension cords are used they must be as specified below.
6. Never carry the 1000 P.O. by the power cord or yank the power cord to disconnect from the receptacle. Keep the power cord away from heat, oil, and sharp edges.
7. To avoid accidental starting, do not carry the 1000 P.O while plugged in.
8. Remove all adjusting wrenches before starting the 1000 P.O.
9. Keep hands away from all moving parts.
10. Dress properly. Do not wear loose clothing or jewelry that can be caught in moving parts.
11. **Never lock or secure the ON-OFF trigger switch in the "ON" position.** Always disconnect the power supply cord when setting up, adjusting, breaking down, transporting or servicing the portable operator.
12. Maintain the 1000 P.O. with care. Keep handles dry, clean, and free of oil or grease. Inspect all switches and cords periodically. If damaged, have them repaired or replaced by an authorized service facility.
13. When not in use, the 1000 P.O. should be stored in a dry and secure location.
14. Stay alert. Watch what you are doing and use common sense.

## EXTENSION CORDS

If an extension cord is necessary, use an extension cord that has a 3-prong, grounded-type plug and 3-pole receptacle. If the extension cord will be used outside, the cord must be marked for outdoor use. When using more than one extension cord to make up the total length, be sure each individual extension contains at least the minimum wire size. We recommend 12-gauge (AWG) for up to 100ft. and 10-gauge (AWG) for up to 150ft.

## INSTRUCTIONS FOR USE OF THE MODEL 1000 PORTABLE OPERATOR

### NOTES

- Inspect the tripod assembly, clutch and drill for damage or wear prior to each use. Make any necessary repairs before operation.
- **Do not use the portable operator to seat or unseat the gate.** The first and last inch of gate travel should be accomplished with the hand crank.

### INSTRUCTIONS

1. Position the tripod at the gate actuator with wide leg stance facing the actuator.
2. Mount the drill on the tripod after attaching the adjusting stem onto the drill body.
3. Insert clutch and arbor into drive sleeve of drill, rotating to properly seat and engage the taper shank.
4. Slide the portable operator assembly toward the actuator and **ensure tripod legs are on solid footing.** Position the tripod with the wide leg stance facing the actuator.
5. Adjust the tripod stem for vertical alignment of clutch coupling and actuator pinion shaft.
6. Engage the clutch coupling onto the actuator pinion shaft by again sliding the portable operator toward the actuator. Lock the coupling onto the actuator pinion shaft with the key and set screw provided.
7. Connect the electrical cord to an appropriate grounded receptacle. When ground fault interrupter-protected circuits are not available, the use of portable ground fault circuit interrupter device is suggested.
8. Start the operator and confirm the desired rotation. Stop and reverse the drill if necessary. Operate the gate to the desired position, disconnect the power supply and remove the portable operator from the actuator pinion shaft.

## TORQUE/GUARD SAFETY CLUTCH OPERATION AND MAINTENANCE

### Operation:

The Torque/Guard clutch is automatically reset by “jogging” the motor after the overload has been corrected. At speeds under 50 RPM the Torque/Guard will re-engage, without jogging, upon starting the motor. The clutch will not re-engage if the overload exceeds the torque setting.

### Torque Limit Setting:

Clutch trip setting is adjustable from 17 ft/lbs up to 50 ft/lbs. Increasing torque setting is accomplished by turning the socket head adjusting bolt clockwise. 5 marks adjacent to bolt provide a reference to gauge torque setting.

### Maintenance:

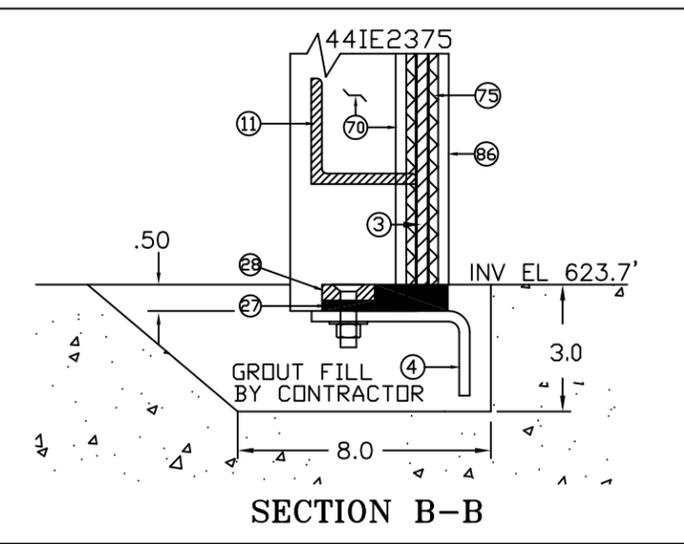
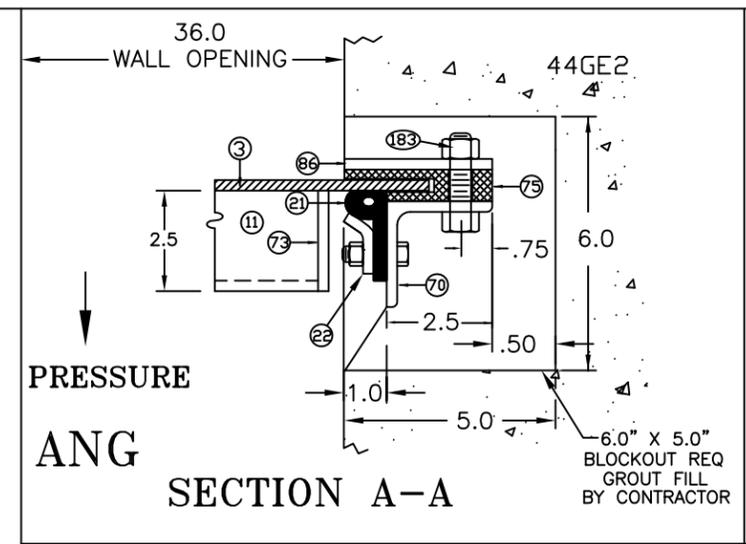
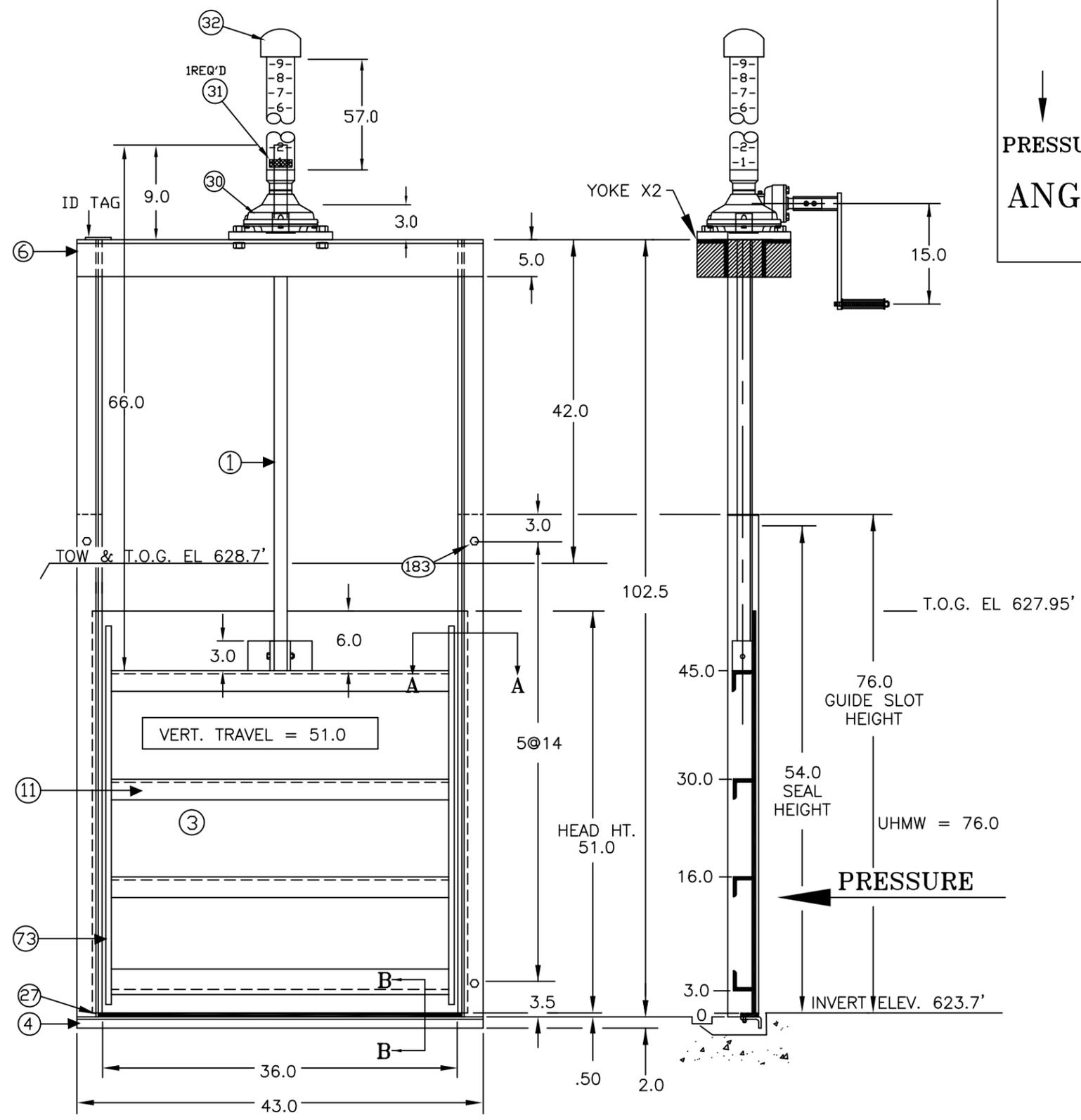
#### Lubrication:

The Torque/Guard is factory lubricated with Mobilux 2 and does not require additional lubrication for many years, under normal operating conditions. It can be lubricated by removing the cover and filling the body cavity to 75% capacity with Mobilux 2 or equivalent grease.

### **WARNING:**

- DO NOT USE PORTABLE OPERATOR WITHOUT TRIPOD AND CLUTCH**
- DO NOT CHANGE CLUTCH RELEASE SETTINGS**
- NEVER SECURE “ON-OFF” SWITCH IN THE “ON” POSITION**
- ALWAYS USE GROUNDED ELECTRICAL CIRCUITS**
- READ ALL DIRECTIONS CAREFULLY PRIOR TO USE**
- WHEN USING ELECTRICAL TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK AND PERSONAL INJURY.**

**FOR RECORD DRAWINGS  
USE FOR INSTALLATION**



MD GH-44 STAINLESS STEEL SLIDE GATE MATERIAL LIST

1	STEM	1.5 DIA W/LH ROLLED ACME THD 16 MICRO IN. RMS OR LESS FINISH	
3	GATE HEAD	1/4" SSTL PLATE	
4	INVERT ANGLE	4.0x2.0x1/4 LLH FORMED SSTL ANGLE	
6	YOKE	5.0 x 3.0 x 1/4 FORMED ANGLE	
11	STIFFENER	2.5x2.0x1/4 SSTL FORMED ANGLE	
21	J-BULB SEAL	NEOPRENE RUBBER	
22	J-SEAL RETAINER	SSTL FLAT BAR	
27	INVERT SEAL	NEOPRENE RUBBER PART# 7666	
28	INVERT RETAINER	3/8x1.25 SSTL FLAT BAR	
30	OPERATOR	MD IB5 2:1 GEAR REDUCTION, CAST IRON HOUSING, BEVEL GEARS, ROLLER BEARING SUPPORTED BRONZE LIFT NUT, GREASE ZERK, OPEN DIRECTION INDICATOR, MECHANICAL SEALS, HANDCRANK	
31	STOP NUT	BRONZE	
32	STEM COVER	CLEAR BUTYRATE PLASTIC WITH MYLAR STRIP INDICATOR CALIBRATED IN FEET AND INCHES WITH PVC END CAP	
N/R	38	STEM GUIDE	2.0x2.0x1/4 SSTL ANGLE W/UHMW STEM GUIDE BUSHING
	70	GUIDE RAIL	2.5x2.5x1/4 SSTL ANGLE
	73	VERTICAL STIFFENER	1/4x2.0 SSTL FLAT BAR
	75	GUIDE BEARING BAR	UHMW PE EXT #01
	86	COVER BAR	1/4x3.5 SSTL FLAT BAR
	183	CLAMP BOLT & MUD LUG	1/2x2.0LG HEX HEAD BOLT, W/NUT & L/W
N/R	190	CENTER STIFFENER	1/4 x 2.0 S-STL FLAT BAR

MATERIAL SPECIFICATIONS:  
 HARDWARE & FASTENERS = TYPE 316 SS ASTM-F593 / F594  
 S-STL FORMED & PLATE = 316L SS ASTM-A240  
 S-STL HR & FLAT BAR SHAPES = TYPE 316L SS ASTM-A276  
 S-STL ROUND BAR = TYPE 316 ASTM A-276  
 S-STL STEM = TYPE 316 SS ASTM-A276  
 UHMWPE = ASTM-D4020  
 NEOPRENE RUBBER = ASTM-D2000  
 BRONZE = ASTM-B584

**INSTALLATION NOTES  
for INSTALLER**

FRAME OR FRAME COMPONENTS, PEDESTAL, WALL BRACKET, STEM GUIDE, AND OPERATOR MUST BE INSTALLED FLAT STRAIGHT AND PLUMB, SHIM AND BRACE AS NECESSARY.  
 SEE OPERATION & MAINTENANCE MANUAL FOR ADDITIONAL INSTALLATION INFORMATION.

TOLERANCES AS FOLLOWS:  
 PARALLEL ±1/8"  
 COPLANER ± 1/8"  
 FLAT & STRAIGHT ± 1/16"  
 SQUARE ± 1/8"

Max Seating Head = 5.0 Ft. - Max Unseating Head = 4.0 Ft.  
 Max Operating Head = 5.0 Ft. Measured From INPUT

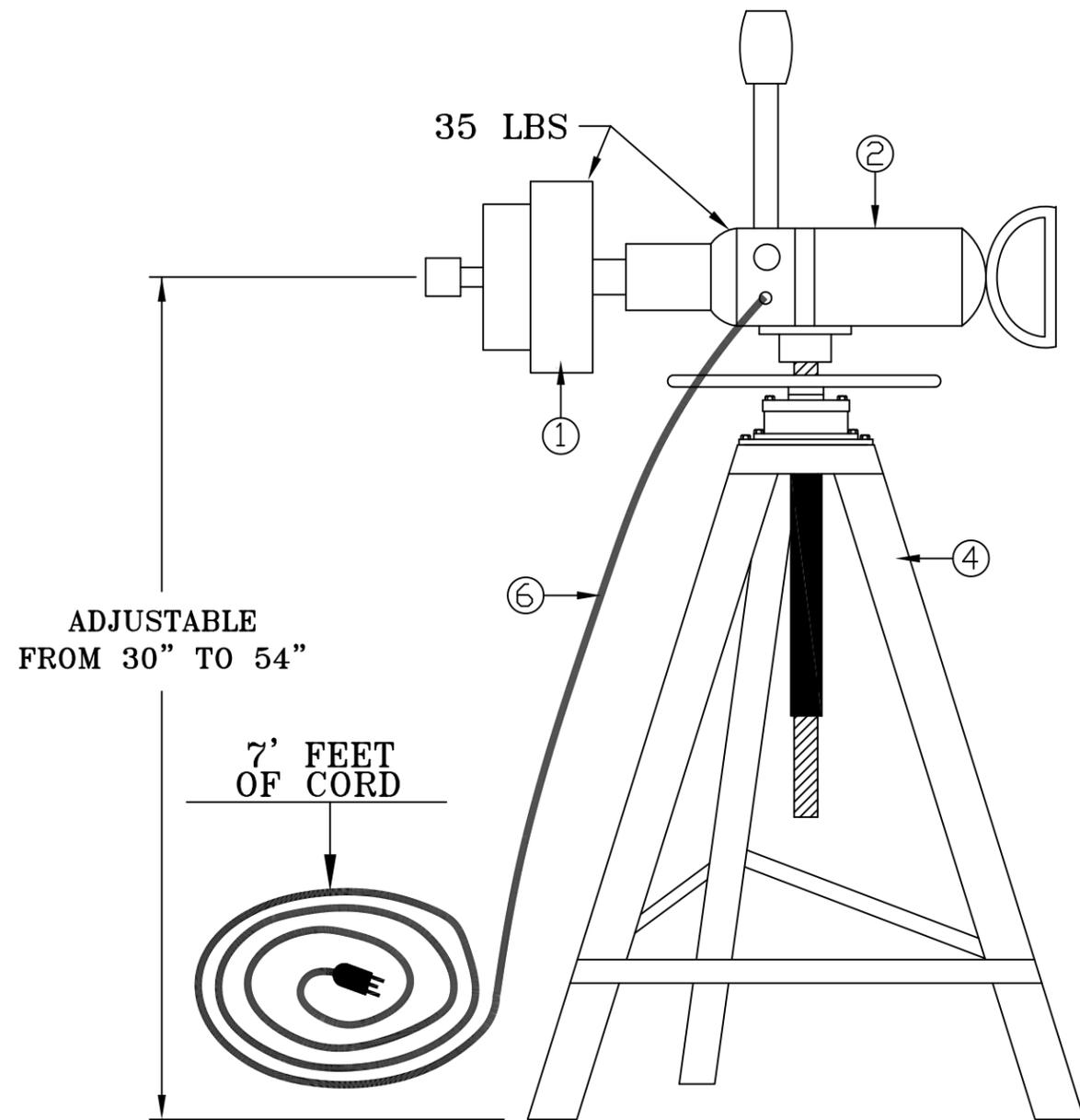
<b>36 x 51 MD GH-44 EMBEDDED MTD SS SLIDE GATE</b>	<b>GOLDEN HARVEST GOLDEN GATES 1-800-338-6238 P.O. BOX 287 Burlington, WA 98233</b>	<b>SCREENING CHANNEL VAULT SG-12003A &amp; B  2 - REQ.</b>
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Project Description: **WASTEWATER TREATMENT PLANT IMPROVEMENTS**  
 For: **WENATCHEE, WA**  
 Contractor: **APOLLO, INC.**  
 Engineer: **HDR**  
 Date Drawn: **12-22-11**  
 Revision: **ONLY DWG #1 & 2 03-20-12**  
 Revision:  
 G.H. Drawing #: **1 OF 3**

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Drawn By: <b>JR</b>	Scale: <b>NTS</b>	Job No.: <b>11-1001</b>	Contract Sht #: <b>120D-02 &amp; 03</b>
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**1** SHIPPING/SHOP NOTE:  
SHIP 25 FT. EXTENSION CORD FOR  
PORTABLE OPERATER.

**PORTABLE ELECTRIC DRILL MOTOR OPERATOR  
TRIPOD MOUNTED FOR GEARED ACTUATOR OPERATION**

**MD 1000 TRIPOD MOUNTED PORTABLE ELECTRIC DRILL MOTOR OPERATOR**

1	CLUTCH	MORSE TORQ/GUARD MODEL TG-200, PAWL TYPE SAFETY CLUTCH
2	DRILL MOTOR	MILWAUKEE MODEL 2404-1 120V REVERSING PORTABLE OPERATOR MOTOR, 250 RPM
4	STAND	ALUMINUM ALLOY 6061-T6
6	ELECTRIC CORD	120V 3 PRONG CORD

MODEL 1000 TRIPOD MOUNTED PORTABLE ELECTRIC DRILL MOTOR OPERATOR	GOLDEN HARVEST GOLDEN GATES 1-800-338-6238 P.O. BOX 287 Burlington, WA 98233	(1) REQUIRED
Project Description: WASTEWATER TREATMENT PLANT IMPROVEMENTS		Date Drawn: 12-22-11
For: WENATCHEE, WA		Revision:
Contractor: APOLLO, INC.		Revision:
Engineer: HDR		G.H. Drawing #: 3
Drawn By: X JR X	Scale: NTS	Job No.: 11-1001 Contract Sht #: -