GROTE COMPANY
1160 Gahanna Parkway
Columbus, Ohio 43230
Telephone 614-868-8414 Fax 614-863-1647
www.grotecompany.com

DISCLAIMER

5/2/2011

Dear Customer,

The Grote Equipment Manual supplied to you is for the used equipment listed below. It is a copy of the original manual which was correct and complete to contemporary standards at the time the machine was released in factory "new" condition. Any modifications to the equipment since it left Grote Service oversight, or performed without our knowledge, may not be included in the manual. The Grote Company makes no warranty of any kind concerning the material contained within this manual.

In addition, parts listed may now be obsolete since the time the manual was released. When ordering parts by Grote part number, our Customer Service representatives will be able to alert you if a part is obsolete. They may not be able to advise you if the part will be usable in the current configuration of the machine. Grote Customer Service and Engineering will be happy to assist you in determining which parts will work. Adequate detailed information regarding the current state of your machine should be provided through photographs, drawing mark-ups, etc.

The design of the machine, as well as the information provided in the manual regarding safety and sanitation guidelines, were complete and appropriate to industry standards at the time of the original sale of the equipment. Please have your company's regulatory bodies examine the machine for safety and sanitation compliance to current industry standards.

Equipment List

Slicer/Applicator
Model: 522 Serial Number: 1065029

Regards,
The Grote Company
1-888-534-7683

Equipment Manual

Slicer/Applicator

***Model**:* 522
***Serial No**:* 1065029

GROTE®

PRECISION SLICING AND APPLICATION SYSTEMS

Grote Service Manual

Slicer/Applicator

Hydraulic and All-Electric Models

_____

Installation Date

ATTENTION

Do not attempt to operate this machine without first installing it correctly.

The customer is responsible for the proper operation of the machine and for following proper safety standards when operating it.

The J. E. Grote Company, Inc. is not responsible for product contamination due to improper use, improper sanitation, or part failure.

The J. E. Grote Company, Inc. reserves the right to make design or operational changes that may not be included in this manual.

The J. E. Grote Company, Inc. makes no warranty of any kind concerning the material contained within this manual and is not liable for errors, omissions, or incidental or consequential damages in connection with the use of this manual.

WARRANTY

This J. E. Grote, Inc. machine is warranted to be free from defects in materials and workmanship for a period of six (6) months. The warranty applies under normal use and service. The warranty period begins the date of complete installation or thirty (30) days after the date of delivery, whichever comes first. Shipping and installation costs of warranty parts are the expense of the customer.

PARTS AND SERVICE

J. E. GROTE COMPANY, Inc.
CORPORATE HEADQUARTERS • 1160 Gahanna Parkway, Blacklick, Ohio 43004 • Tel: 614-868-8414 • Fax 614-863-1647
Parts and Service (Toll Free within USA) • Tel: 1-888-53-GROTE (534-7683) • Fax: 1-888-39-GROTE (394-7683)
E-mail: service@grote.company.com sales@grotecompany.com

EUROPEAN SALES/SERVICE • Wrexham Technology Park, Wrexham, North Wales LL137YP, United Kingdom
Tel: Int +44 (0) 1978-362243 • Fax: Int +44 (0) 1978-362255
E-Mail: service@intl.grotecompany.com sales@intl.grotecompany.com

Table of Contents

Information in the text section of this manual applies to all machines of this type unless otherwise noted. The Operator Interface Information (when provided), Spare Parts List and Drawings apply to the specific machine identified on the front cover.

OPERATION INFORMATION

Operating information is typically provided by Grote Service Personnel when a machine is installed. On some machines this manual includes additional specific information about the Operator Interface. When this information is provided it is in the Operator Interface section near the end of the manual.

Note: Supplemental information may be inserted in the front cover pocket.

List of Figures

MAINTENANCE AND ADJUSTMENTS

This manual contains information about how to maintain, adjust, and clean the standard Grote Slicer/Applicator. It does not include setup, control, and operational procedures.

Manual Covers Both Hydraulic and All-Electric Slicers

Grote slicers are built with two different types of power systems, Hydraulic and All-Electric. The All-Electric slicer differs from the Hydraulic Slicer in several ways other than just the power system of the machine. When a function being described differs with the type of slicer each type is identified and described in this manual.

Hydraulic Power System

A built-in hydraulic power system drives the slicing heads. Slicing is controlled by hydraulic valves that turn the hydraulic power on and off and set the speed of the slicing heads. A typical single head hydraulic slicer is shown in Figure 1.

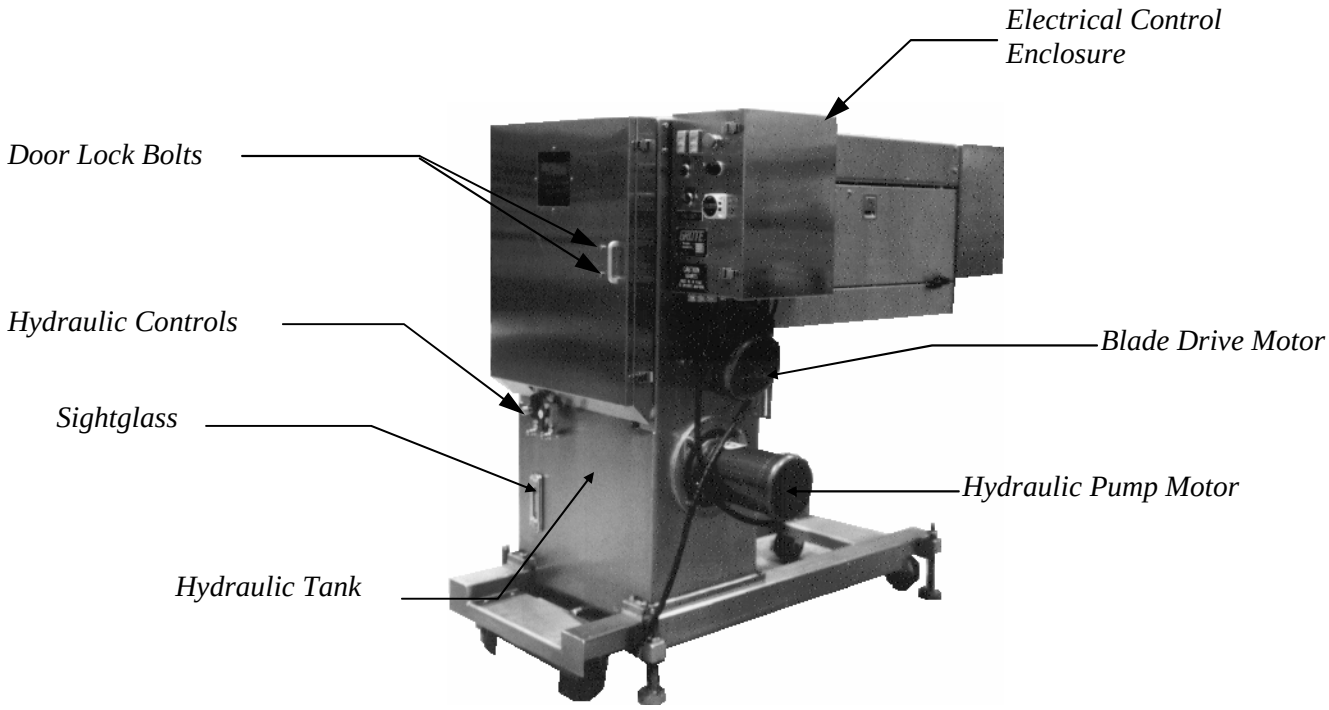


Figure 1. *Typical Single-Head Hydraulic Slicer.*

All-Electric Power System

The slicing heads are driven by an electric servo motor power system. Controls are all electrical and controlled by a Programmed Logic Controller through an Operator Interface. A typical single head all-electric slicer is shown in Figure 2.

Figure 2. *Typical Single-Head All-Electric Slicer (To Be Provided).*

Note:	Both types of slicers are described in this manual. When a section applies to only one type of system, it is identified in the section heading.

Safety Cabinetry

The cutting blade and drive mechanism for the blade are completely enclosed to provide maximum safety for the operator. Access to the blade is easy with doors and removable covers.

Optionally provided proximity switches sense guard door closure and cut power to the slicer when one of the doors is opened. The blade drive pulleys coast to a stop if they are running when a door is opened.

Mechanically interlocked, defeat-proof safety switches are available as an option for guard doors. These switches act as locks, preventing the doors from being opened until the machine has been shut off and the blade drive pulleys have stopped rotating. The slicer must have power applied before these switches will operate and allow the doors to be opened. A *Safety Interlock Switch Locations* drawing included with the drawings at the end of the manual shows the location of the interlock switches.

CAUTION:	The safety cabinetry described above prevents an operator from gaining access to the cutting blade from any position around the machine while the blade is running. A conveying device under the slicer prevents the operator from access to the cutting blade from beneath the machine. *If the slicer is operated without a conveying device in place, then steps must be taken to keep personnel from moving under the slicer while it is operating.*

Lubrication – All Electric Slicers

Each slicing head has two grease points. One is on the end of the rod connecting the offset crank to the cluster box and one is on the crank bearing. Grease all fittings after each washdown to purge excess water from the bearings and increase component life. Use FML-2 Lubriplate or equivalent USDA approved grease.

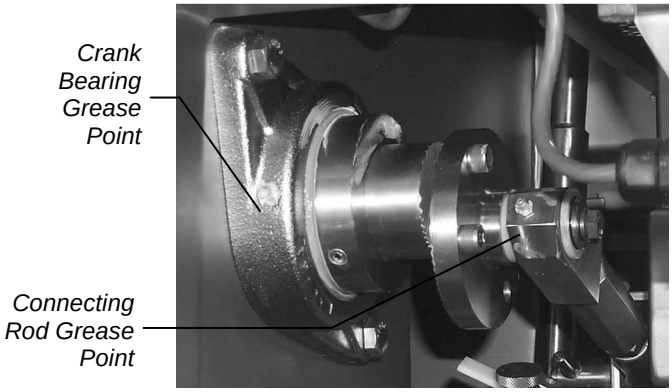


Figure 3. Grease Points

Lubrication - Hydraulic Slicers

Grease the following bearings after each washdown of the equipment using FML-2 Lubriplate or equivalent USDA approved grease. The remaining bearings should be greased weekly.

1. Drive side bearing block (Also grease the idle side bearing block on older machines that use a non-sealed idle side bearing block).
2. Pivot rod ends (product holder box linkage).
3. Product holder box pivot point.

Check the condition of the bearings weekly and replace the bearings when any free movement is detected. If movement is detected in the idle side drive pulley, replace the entire sealed bearing assembly.

Self-contained Hydraulic Power System

NOTE: An OSHA Material Safety Data Sheet for the hydraulic oil is in Figure 4.

Some slicers are equipped with a built-in hydraulic power system. Hydraulic pump capacity is typically six gpm with 60 hz electrical input or five gpm with 50 hz electrical input.

1. Check the reservoir oil level daily and keep it full using medium weight (SAE 10, SSU 213) hydraulic fluid. The black line indicates full and the red line indicates low. The level should never fall below the red line.
2. Maintain the hydraulic system pressure at the normal operating pressure of 450 psig. Never allow the machine to exceed 1000 psig.
3. Maximum operating temperature should not exceed 140 ^{O}F (60 ^{O}C).
4. Replace the return line oil filter cartridge after the first 50 hours of operation and every 300 hours thereafter. The oil filter is located inside the hydraulic tank.

Adding Hydraulic Fluid

Add medium weight fluid (SAE 10 or equivalent) if the level falls below the line in the sight glass liquid level indicator.

1. Remove the tank cover.
2. Pour the hydraulic fluid through a 200 mesh or finer screen until the level indicator reaches the line on the sight glass.
3. Replace the tank cover and tighten the nuts that hold it in place.

Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved OMB No. 1218-0072

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permited. If any item is not applicable, or no information is available, the space must be marked to indicate that.
TPR-19	

Section 1

Manufacturer's Name	Emergency Telephone Number
NATIONAL OIL PRODUCTS	(513) 896-6692
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
1000 FOREST AVENUE	SAME
HAMILTON, OHIO 45015	Date Prepared JULY 22, 1997
	Signature of Preparer (optional)

Section II – Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Units Recommended	% (optional)
SOLVENT REFINED PARAFFINIC PETROLEUM OIL				
BY DEFINITION IN OSHA STANDARD 29 CFR 1900.1200,				
THIS PRODUCT CONTAINS NO INGREDIENTS CLASSIFIED				
AS HAZARDOUS.				

Section III – Physical/Chemical Characteristics

Boiling Point	>624 ℉	Specific Gravity (H_2O = 1)	<.90
Vapor Pressure (mm Hg)	@ 68 ℉	Melting Point	N/A
Vapor Density (AIR = 1)	10	Evaporation Rate (Butyl Acetate = 1) 1000 X	SLOWER
Solubility in Water	NIL		
Appearance and Odor	AMBER LIQUID – CHARACTERISTIC OIL ODOR		

Section IV – Fire and Explosion Hazard Data

Flash Point (Method Used)	425 ℉ (COC)	Flammable Limits	LEL N/A	UEL N/A
Extinguishing Media	CO_2 – CHEMICAL FOAM – WATER FOGG – DRY CHEMICAL			
Special Fire Fighting Procedures	USE SELF-CONTAINED BREATHING APPARATUS WHEN FIGHTING FIRE			
	IN CONFINED SPACE.			
Unusual Fire and Explosion Hazards	NONE.			

(Reproduce locally) N/A: NOT APPLICABLE N/D: NOT DETERMINED osha 174, Sept. 1985

Figure 4. OSHA Material Safety Data Sheet for Hydraulic Oil - Pg 1

Section V – Reactivity Data				
Stability	Unstable		Conditions to Avoid	N/A
	Stable	X		
Incompatibility (Materials to Avoid)	STRONG OXIDIZERS			
Hazardous Decomposition or Byproducts				
Hazardous Polymerization	May Occur		Conditions to Avoid	N/A
	Will Not Occur	X		

Section VI – Health Hazard Data			
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	NO EFFECTS	NON-TOXIC	NON-TOXIC
Health Hazards (Acute and Chronic)	NO ACUTE EFFECTS FROM INCIDENTAL CONTACT.		
	NO CHRONIC EFFECTS EXPECTED.		
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NOT LISTED	NOT LISTED	NO
Signs and Symptoms of Exposure	NONE KNOWN		
Medical Conditions Generally Aggravated by Exposure	NONE KNOWN		
Emergency and First Aid Procedures	EYE CONTACT: MILDLY IRRITATING – FLUSH REPEATEDLY WITH WATER.		
	INGESTION: NON-TOXIC, BUT SEEK MEDICAL ATTENTION.		

Section VII – Precautions for Safe Handling and Use	
Steps to be Taken in Case Material is Released or Spilled	TREAT AS ANY PETROLEUM OIL. SMALL QUANTITIES MAY
	BE ABSORBED WITH APPROPRIATE ABSORBENT.
Waste Disposal Method	DISPOSE OF AS WASTE OIL, IN COMPLIANCE WITH FEDERAL, STATE, AND
	LOCAL REGULATIONS.
Precautions to be Taken in Handling and Storing	DO NOT STORE NEAR OPEN FLAME.
Other Precautions	EMPTY CONTAINERS MAY CONTAIN COMBUSTIBLE RESIDUE – LIQUID AND/OR
	VAPOR. DO NOT CUT, GRIND, OR WELD. RETURN TO A DRUM RE-CONDITIONER.

Section VIII – Control Measures				
Respiratory Protection (Specify Type)	NOT REQUIRED			
Ventilation	Local Exhaust	NOT REQUIRED	Special	NOT REQUIRED
	Mechanical (General)	DESIREABLE	Other	N/A
Protective Gloves	IMPERVIOUS MATERIAL, IF DESIRED		Eye Protection	SAFETY GLASSES, IF DESIRED
Other Protective Clothing or Equipment	NOT REQUIRED			
Work/Hygenic Practices	NORMAL, GOOD PERSONAL HYGIENE, WASH OIL SOAKED CLOTHES.			

USOPO: 1988-491-329/45775

NFPA RATING: HEALTH: 0 FLAMMABILITY: 1 REACTIVITY: 0 SPECIAL: _

Figure 5. OSHA Material Safety Data Sheet for Hydraulic Oil - Pg 2

Blade Scraper - All-Electric Slicers

A blade scraper made from three strips of Delrin® that rub against the top and bottom of the blade removes residue from the blade as it is running (See Figure 6). The top strip is hinge mounted so that it can be moved away from the blade. The strip must be rotated down and locked in position before starting the blade.

Check the blade scraper acetal strips daily for noticeable wear. Replace them before wear becomes excessive and wiping efficiency suffers.

Blade Scraper - Hydraulic Slicers

The blade scraper, sometimes called plow wiper, is made from two thin flat strips of Delrin® that rub against the top and bottom of the blade to remove residue as the blade is running. It is located on the drive side top of the cutting blade. The blade scraper must be centered on the blade to insure that all residue is removed from the blade. Loosen the two set screws holding the wipers in place and move them as needed to center the scraper on the band blade.

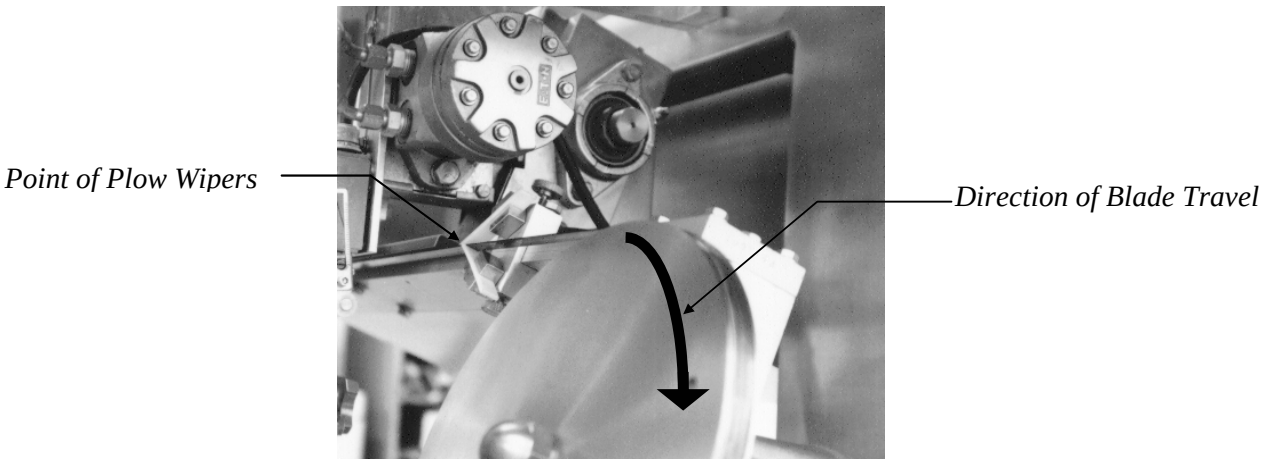


Figure 7. *Blade scraper - Hydraulic Machines*

The scraper must be adjusted so it makes firm contact with the blade as the blade enters the point of the scraper. The top strip is hinge mounted so that it can be moved away from the blade. To adjust the scraper move the lower scraper strip up until it touches and causes approximately 1/8 inch deflection of the cutting blade. Then rotate the upper scraper strip

down until it just contacts the blade. Firmly tighten both thumbscrews. Figure 7 shows a blade scraper that is properly adjusted.

Check the blade scraper daily for noticeable wear. It should be replaced before wear becomes excessive and wiping efficiency suffers. If uneven wear occurs, trim the edges of the scraper.

Blade Guide Maintenance

The blade guide should be checked for wear every 100 hours using the blade guide maintenance tools furnished with each new machine. It should be checked for chips or cracks at every blade change and replaced if any are present.

NOTE: It is important that the condition and wear of the blade guide be checked regularly. Excessive wear of the blade guide reduces both the slice quality and the yield.

Blade Guide Maintenance Tools

A set of three Blade Guide Maintenance tools is included with each new slicer. One tool is a scraper for cleaning the slot in the blade guide. The other two are for checking the blade guide slot for excessive wear. It is important to check the blade guide if slice placement accuracy or yield is affected. A worn slot may be the cause. The tools are shown below. Each tool has a blue plastic handle.

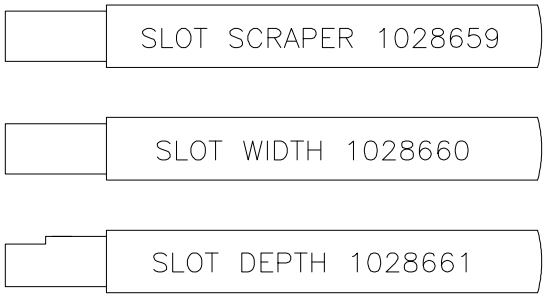


Figure 8. *Blade Guide Maintenance Tools.*

Slot Scraper

The blade guide scraper (1028659) is for cleaning the blade guide slot during the sanitation process. Simply insert the blade of the scraper into the slot and move it back and forth along the entire length of the slot. It should move freely from one end of the blade guide to the other. If an obstruction is met use care in dislodging it as the blade guide is hardened steel and subject to cracking. You may wish to consult a Grote Service Representative if the obstruction cannot be easily dislodged.

Slot Width Checking Tool

The "width" wear checking tool (1028660) is for checking the width of the blade guide slot for excessive wear. Use the tool by *attempting* to insert the blade of the tool into the slot of the blade guide. The blade of the tool is thicker than the standard slot width so that

if the tool inserts easily into the slot the blade guide is worn excessively and may need to be replaced. Check the blade guide along the entire length, especially in the region where the food product has been passing across the guide.

CAUTION:	The tool will not insert into a new blade guide. Do not force this tool into the slot as damage to the guide may result.

Slot Depth Checking Tool

The "depth" wear checking tool (1028661) is for checking the depth of the blade guide slot for excessive wear. Use the tool by inserting the blade of the tool into the slot until it touches the bottom. If the notch in the tool inserts beyond the top edge of the blade guide the blade guide slot is worn excessively and the blade guide may need to be replaced. Check the blade guide along the entire length, especially in the region where the food product has been passing across the guide.

Blade Guide Adjustment

The blade guide must be adjusted so the band blade runs smoothly through the entire length of the slot in order to get good slice quality.

NOTE:	Check the adjustment where the blade both enters and leaves the blade guide slot. Verify that the blade is not too loose and does not contact the edges of the slot.

Use the following steps to adjust the blade guide.

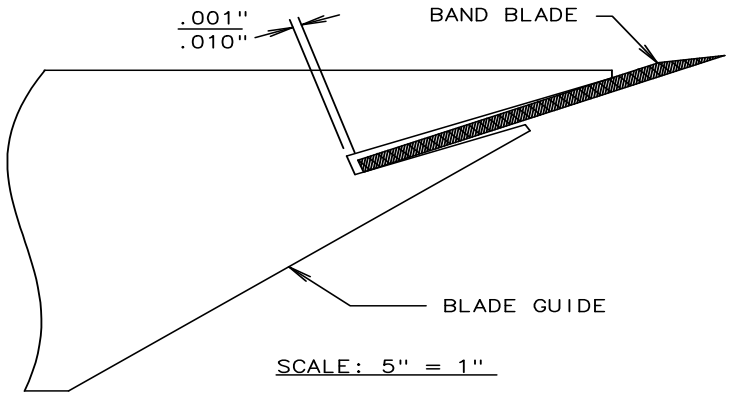


Figure 9. *Blade Guide.*

1. Loosen the four mounting bolts for the blade guide.
2. Check the blade tracking to make sure that it is correct.
3. Verify that the welded joint of the blade is not in the blade guide slot and hand tighten the blade guide mounting bolts.
4. (See Figure 9) Adjust the blade guide forward or backward until the blade clearance on one end is between 0.001" and 0.010" (approximately 1/2 of the band blade thickness). Snug the bolts on that end.

5. Repeat the procedure on the other end of the blade guide. Snug these bolts also.
6. Repeat the above two steps until both ends of the blade guide are properly adjusted. Tighten the blade guide bolts.
7. Check the blade tracking. If the blade is not tracking properly, the adjustment of the blade guide was done incorrectly. If this happens, the blade guide must be moved away from the blade and tracking must be corrected before the blade guide adjustment procedure can be repeated.
8. Reinstall the water applicator pad, rotate the plow wipers into position, and replace the guards on the machine.

(Opt) Quick Disc Blade Guide Adjustment - All-Electric Slicers

1. Loosen the two threaded handles located beneath the exit guard by turning them counterclockwise (See Figure 10). Push the two handles forward towards the entry side of the slicer to release the pins from the hold-down slides.

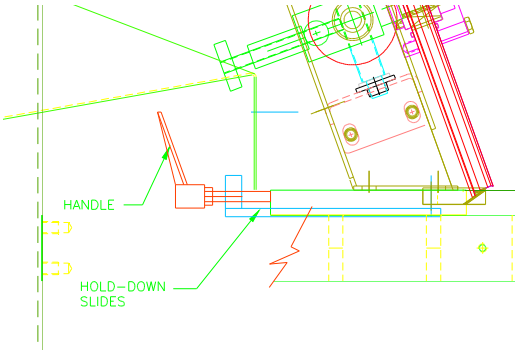


Figure 10. *Quick Disconnect Blade Guide.*

2. Loosen the two backstop bolts at each end of the blade guide. Release the two hold-down clamps located at each end of the blade guide (See Figure 11).

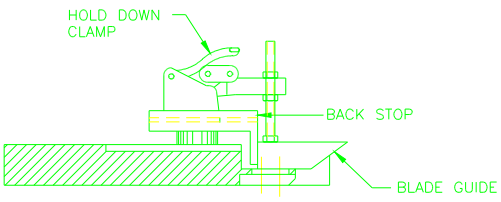


Figure 11. *Quick Disconnect Hold-Down Clamp.*

3. Verify that the blade is tracking correctly and the welded joint of the blade is not in the blade guide slot.
4. (See Figure 9) Adjust the blade guide forward or backward until the blade clearance on one end is between 0.001" and 0.010" (approximately 1/2 of the band blade thickness). Move the backstop forward until it contacts the rear of the blade guide. Tighten the backstop bolts and clamp down that end of the guide.
5. Repeat the procedure on the other end of the blade guide. Adjust the backstops and clamp down this end of the guide also.
6. Repeat the above two steps until both ends of the blade guide are properly adjusted. Once the guide is set, hand tighten the two threaded handles located beneath the exit guard.

CAUTION:	Do not overtighten. Turn the handles until a slight resistance is felt between the slides and the center hold-down pins.

7. Check blade tracking. Repeat the adjustment if the blade is not tracking correctly.
8. Attach the water quick connects to the blade guide if applicable.

(Opt) Removing the Quick Disc Blade Guide - All-Electric Slicers

1. Disconnect the water lines from the blade guide.
2. Loosen the two threaded handles located beneath the exit guard by turning them counterclockwise. Release the pins from the hold-down slides by pushing the two handles forward towards the entry side of the slicer.
3. Release the two hold down clamps located at each end of the blade guide. Remove the clamps if necessary.

The blade guide, backtray and hold-down slides can now be removed.

(Opt) Reinstalling the Quick Disc Blade Guide - All-Electric Slicers

1. Loosen the two threaded handles located beneath the exit guard (if necessary) by turning them counterclockwise. Push the two handles forward towards the entry side of the slicer.
2. Install the blade guide by aligning the locating pins with the slots in the bearing bar.
3. Push the blade guide back until it contacts the stops at each end of the guide. Clamp each end of the guide.
4. Once the guide is set, hand tighten the two threaded handles located beneath the exit guard.

CAUTION:	Do not overtighten. Turn the handles until a slight resistance is felt between the slides and the center hold-down pins.

5. In applicable, attach the water quick connects to the blade guide.

(Opt) Installing a New Quick Disc Blade Guide - All-Electric Slicers

1. Loosen the two threaded handles located beneath the exit guard (if necessary) by turning them counterclockwise. Push the two handles forward towards the entry side of the Slicer.

2. Install the blade guide by aligning the locating pins with the slots in the bearing bar.
3. Loosen the two backstop bolts at each end of the blade guide.
4. Check the blade tracking to make sure that it is correct.
5. Verify that the welded joint of the blade is not in the blade guide slot.
6. Adjust the blade guide forward or backward until the blade clearance on one end is between .03 mm and .3 mm (approximately 1/2 of the band blade thickness). Move the backstop forward until it contacts the rear of the blade guide. Tighten the backstop bolts and clamp down that end of the guide.
7. Repeat the procedure on the other end of the blade guide. Adjust the backstops and clamp down this end of the guide also.
8. Repeat the above two steps until both ends of the blade guide are properly adjusted. Once the guide is set, hand tighten the two threaded handles located beneath the exit guard.

CAUTION:	Do not overtighten. Turn the handles until a slight resistance is felt between the slides and the center hold-down pins.

9. If applicable, attach the water quick connects to the blade guide.

Blade Motor Belt Drive - Hydraulic Slicers

On belt drive slicers, the belt that drives the blade pulley should be checked once a month for wear and proper adjustment. Remove the belt cover and examine the belt. If it is glazed or cracked, replace the belt. Check the tension in the belt and if it needs changing loosen the mounting bolts for the blade motor and adjust the tension.

Product Holders

Height Adjustment

The product holder height is the clearance between the bottom edge of the product holder and the tip of the band blade. This distance should be no less than 1/32" (0.8 mm) and no more than 1/16" (1.6 mm). If there is not sufficient clearance, slice quality will suffer. To check the clearance, pull the product holder box pull pin and move the product holders across the blade.

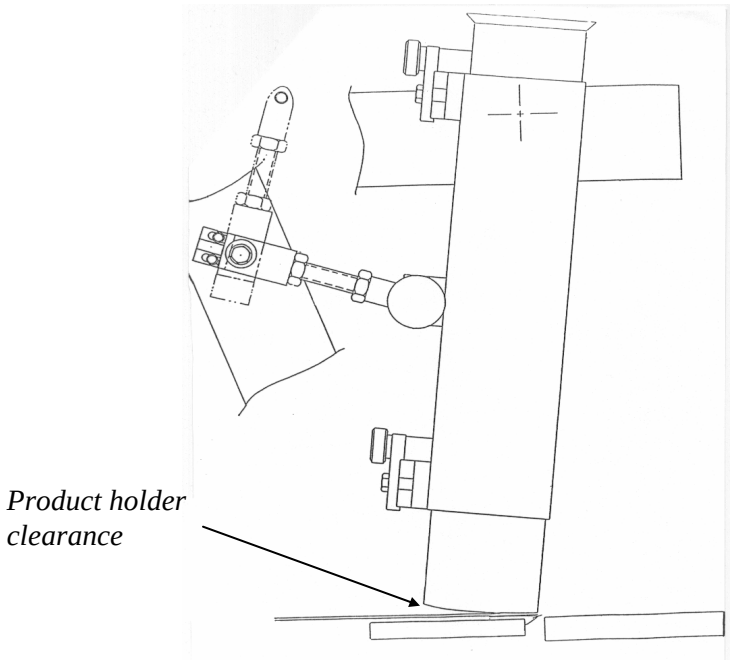


Figure 12. Correct Product Holder Height.

Product Holder Height Adj - Hydraulic Slicers

The following steps are used to adjust the product holder clearance. On split-head machines each cluster must be adjusted separately.

Figure 14 shows the adjustment bolts for the product holder clearance and Figure 12 shows the proper height adjustment.

1. Install the product holders in the slicer and release the pull pin. Swing the holders across the blade guide.
2. Loosen the hex head cap screws in the adjustment jack screw.
3. Raise or lower the product holder box by turning the adjustment jack screws until the clearance between the bottom of the product holder and the tip of the band blade is between 1/32" (0.8 mm) and 1/16" (1.6 mm).
4. When the product holder height is properly adjusted, tighten the hex head cap screw.
5. Reinsert the pull pin and the adjustment is complete.
6. Repeat the above procedure for all product holder boxes.

Product Holder Height Adj - All-Electric Slicers

The height adjustment for All-Electric Slicers is similar to the Hydraulic Slicers. Each slicing head must be adjusted using two jack bolts on each side at the top of the product holders. The jack bolts rest on a support block welded to the frame (See Figure 13).).

1. Install the product holders in the slicer and release the pull pin. Swing the holders across the blade guide.
2. Loosen the hex head cap screws in the adjustment jack screws.
3. Raise or lower the product holder box by turning the adjustment jack screws until the clearance between the bottom of the product holder and the tip of the band blade is between 1/32" (0.8 mm) and 1/16" (1.6 mm).
4. When the product holder height is properly adjusted, tighten the hex head cap screws.
5. Reinsert the pull pin and the adjustment is complete.
6. Repeat the above procedure for all product holder boxes.

Alignment

The location of the product holder mounting brackets determines where the slices will be applied on the conveyor. Product holders must be mounted directly over the area on the conveyor where the slices are to be placed. The following steps should be used to adjust the alignment of the product holders.

1. With the product holders still in the slicer, loosen the bolts on the product holder mounting blocks.
2. Align the product holders so that the slices will fall in the proper place on the conveyor. This adjustment is very important when applying slices to targets.
3. Tighten the bolts when the product holders have been properly aligned.

Pivot Point - Hydraulic Slicers

The product holder pivot point may need to be adjusted when product holders larger than 5" are used. If the stroke length cannot be made long enough for the slicer to cut completely through the product, change the pivot point to the extended position. Move the pivot point back to the original position when the smaller product holders are placed back in the slicer. See Figure 14.

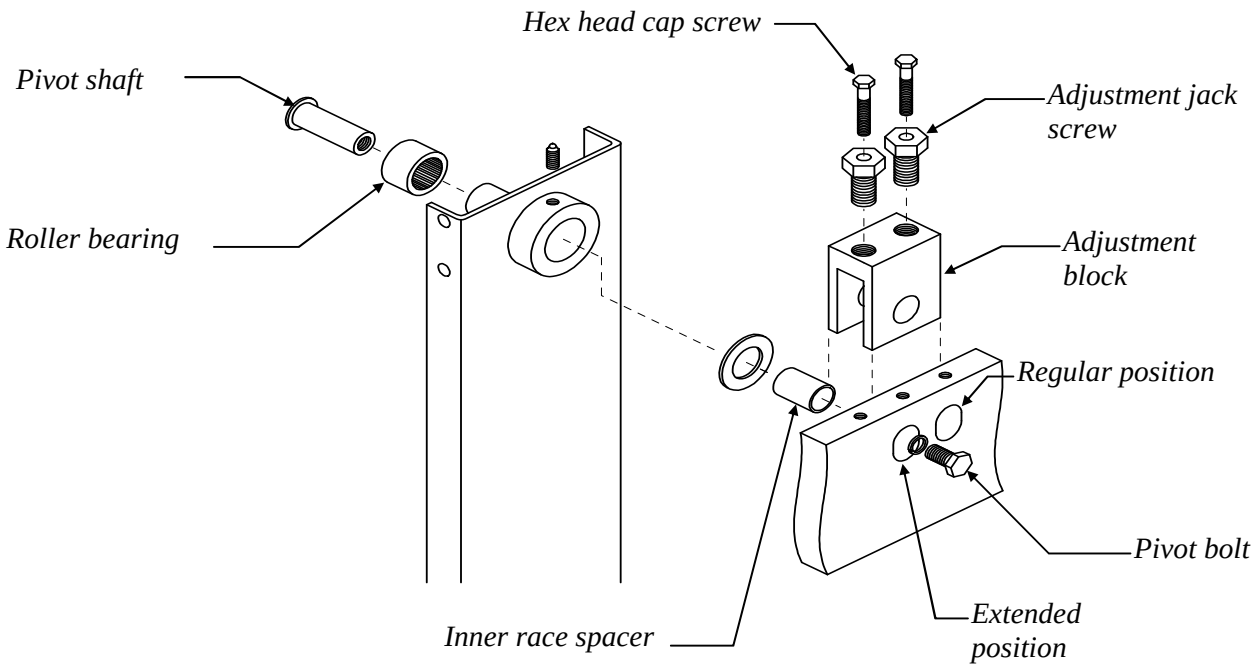


Figure 13. *Product Holder Box Pivot Point - Hydraulic Machines*

The following steps detail the procedure for changing to the extended position.

1. Remove the product holders.
2. Remove the bolt in the hole in front of the adjustment block. Loosen the hex head cap screws and the adjustment jack screws.
3. Remove the pivot bolt and pull the insert (pivot shaft, roller bearing and inner-race spacer) out of the pivot hole from the outside.
4. Move the pivot block to the extended position and reinstall the insert. Tighten the pivot bolt into the insert.
5. Tighten the adjustment jack screw and the hex head cap screw. Place the remaining bolt in the exposed hole on the top of the frame.
6. Adjust the height of the product holder box, the stroke length, and the stroke starting point.
7. On multiple split-head machines, the lock pin assembly for heads 2, 4, and 6 must be moved to the extended position whenever the product holder box is moved to the extended position. Also adjust the roller arm of the limit switch mounted on the lock pin assembly so that it is tripped near the end of the slicing stroke.

Slice Stroke Adjustment

Check the adjustments of the stroke length and stroke starting point by running at a very slow speed. The motion of the product holder should be slow enough to allow the relative positions of the blade and the product holder to be seen. Readjust as necessary until the stroke is centered over the blade with the proper stroke length

Stroke Length

Because the stroke length determines the distance that the product holder travels during the slicing stroke, it needs to be adjusted whenever a different size product holder is installed in the slicer. Keep distance as short as possible to minimize the time required to perform the slicing and return motions. The product holder should have about 1/8" (3.2 mm) movement before the front edge of the product holder crosses the blade. The back edge of the product holder should go approximately 1/8" (3.2 mm) past the blade. Figure 15 shows the location of the stroke length adjustment.

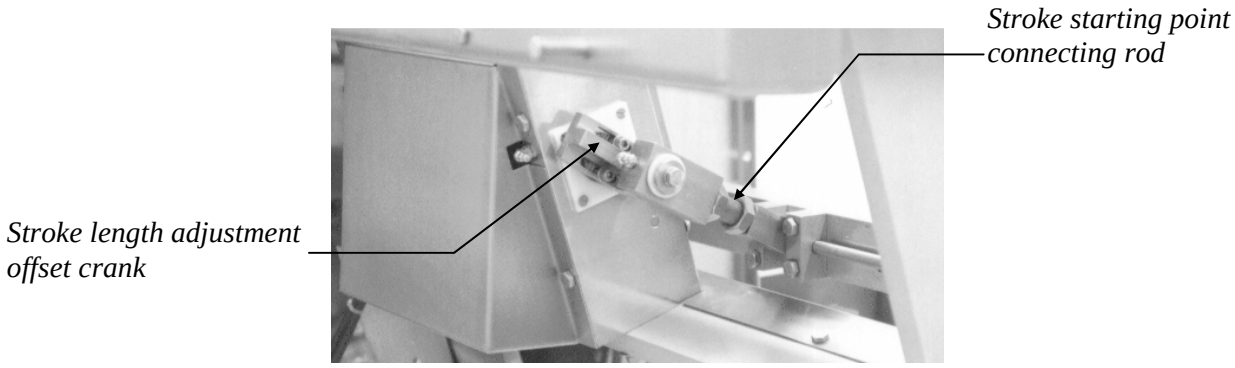


Figure 14. *Stroke Length Adjustment.*

Adjust the stroke length by loosening the two socket head cap screws on the offset crank and then moving the offset. Increasing the offset makes the stroke length longer and decreasing the offset makes it shorter. Moving the adjustment by one tooth will change the stroke approximately 1/2" (1/4" on either side of the product holder). Tighten the socket head cap screws before starting the machine.

(Opt) Two-Position Stroke Adjustment - All-Electric Slicers

Two pull pin positions on the side of the cluster box allow a quicker means of adjusting the stroke length. Placing the pull pin in the upper locating hole, will increase the stroke length approximately 25 mm.

Stroke Starting Point

Adjusting the stroke length provides the proper amount of product holder travel but the stroke needs to be centered over the blade. The stroke starting point adjustment centers the slicing stroke directly over the band blade by changing the length of the connecting rod between the offset crank and the product holder box. This adjustment must always be checked after the stroke length has been changed.

(See Figure 15) Adjust the stroke starting point by first loosening the jam nut of the connecting rod and then releasing the pull pin. Turn the rod end in to move the starting and ending positions toward the offset crank. Turn the rod end out to move the starting and ending positions away from the offset crank. One complete turn of the rod end will move the starting point approximately 1/8" (3.2 mm). Insert the pull pin when this adjustment is complete.

Stroke Speed

Hydraulic Slicers - The speed of the slicing stroke is adjusted with the hydraulic flow-control valve on the side of the slicer frame.

All-Electric Slicers - The speed of the slicing stroke is adjusted with the key pad on the operator interface.

Stroke speed should be adjusted so that the cluster moves across the blade at a speed matching that of the conveyor. Variations to this may be desired and can be determined upon actual application. The speed of the overall stroke cycle must be fast enough to allow the cluster to be at the original starting position when it is time to start the forward motion of the next cycle.

The maximum recommended stroke speed is dependent upon the stroke length. Longer stroke lengths require more mechanical travel of the cluster assembly thus limiting the allowable number of strokes per minute. The following table lists the maximum strokes per minute for the listed stroke lengths.

Stroke Length in Inches	Product Size in Inches	Hydraulic Usage in GPM	Max Recommended Strokes/Minute
2.0	1.5	5.3	176
2.5	2.0	5.0	168
3.0	2.5	4.8	160
3.5	3.0	4.6	152
4.0	3.5	4.3	144
4.5	4.0	4.1	136
5.0	4.5	3.8	128
5.5	5.0	3.6	120
6.0	5.5	3.4	112

Maximum Recommended Strokes per Minute

Note: The maximum rating of the slicer is 176 strokes/minute.

Other factors that affect the stroke speed are:

1. Shuttle Conveyor - Slicers equipped with a shuttle conveyor should not exceed 120 strokes/minute.
2. Quick Return - The quick return feature becomes largely ineffective at speeds above 70 strokes/minute.
3. Product Pusher - Slicers equipped with a product pusher should not be run at speeds above 140 strokes/minute.

Changing the Thickness Range

Figure 16 shows the adjustment bolts for the slice thickness range and slice gap on standard thickness trays.

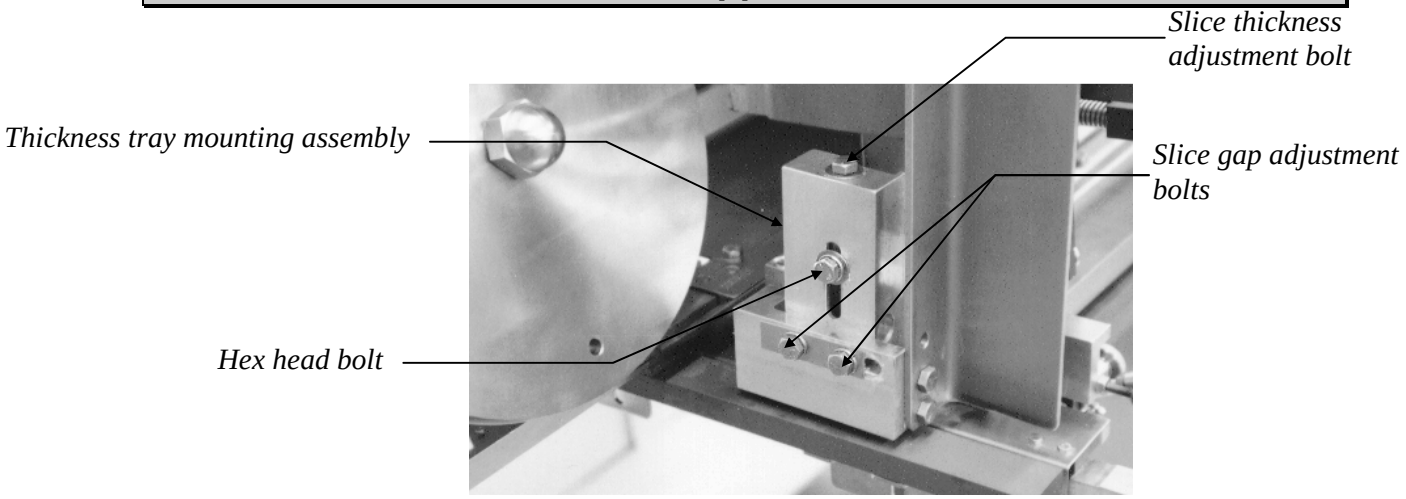


Figure 15. *Slice Gap and Slice Thickness Adjustment Bolts - Hydraulic Machines*

First, loosen the two hex head bolts in the side of the thickness tray mounting assemblies. The slice thickness tray pivot point can then be lowered or raised by turning the adjusting bolts located in the top of the adjustment blocks. When the tray is at the desired height, it is parallel to the top surface of the blade guide. Verify that the thickness tray is level at this height and tighten the hex head screws on the side of the adjustment blocks.

Slice Gap Adjustment - Hydraulic Slicers

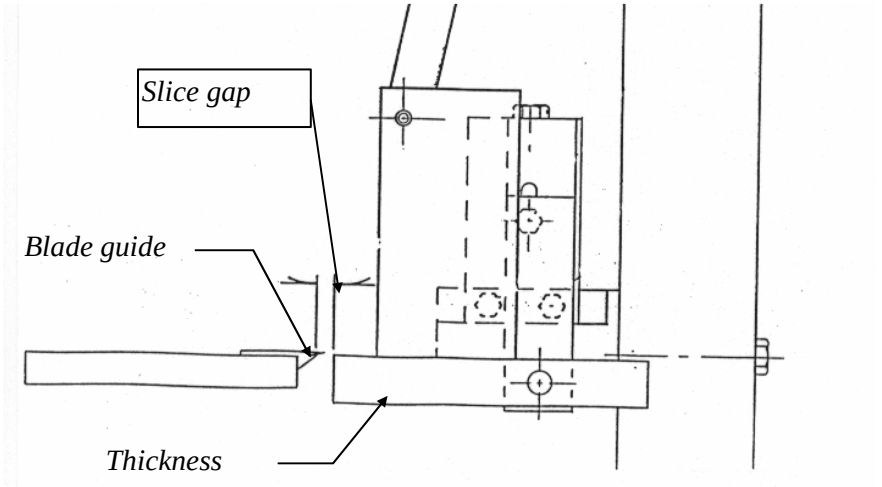


Figure 16. *Slice Gap.*

Adjust the slice gap, see Figure 17, using the following table, so that there is enough room between the thickness tray and the blade guide for the slices to pass through. Some variance from the values in the table may be necessary to obtain closer accuracy on very thin slices or to prevent thicker slices from "hanging up" on the blade guide.

Slice Thickness	*Slice Gap*
Less than 1/16" (1.6 mm)	3/16-7/32"(4.8-5.1 mm)
1/16-1/8" (1.6-3.2 mm)	7/32-9/32" (5.1-7.1 mm)
1/8-1/4" (3.2-6.4 mm)	9/32-3/8" (7.1-9.5 mm)
1/4-3/8" (6.4-9.5 mm)	3/8-7/16" (9.5-11.1 mm)

The slice gap adjustment procedure is listed below. Figure 16 shows the slice gap adjustment bolts.

1. Loosen the two hex head screws in the bottom of the thickness tray.
2. Adjust the slice gap.
3. Align the other side of the thickness tray in the same manner.
4. Tighten the adjustment bolts.

Slice Gap Adjustment - All-Electric Slicers

1. On both ends of the thickness tray loosen the two hex head cap screws holding the Adjustment Block to the Pivot Block Support .
2. Adjust the slice gap by using a hammer to tap the Adjustment Block back and forth in the horizontal direction.
3. Alternate between the ends of the thickness tray until the desired gap is obtained and the gap is uniform across the width of the thickness tray. Refer to the slice thickness/gap table in the hydraulic slicer slice gap description above.
4. Tighten the four hex head cap screws that were loosened in step 1.

Leveling the Thickness Tray

The thickness tray should be level (parallel or even with) the blade guide. Slice thickness may not be uniform if the tray is uneven. Adjust the tray by using the following procedure:

1. Set the band blade tracking as described later. (Remove the band blade after setting the tracking).
2. Set the Slice-gap as described in Slice Gap Adjustment on Page 5.
3. Loosen the hex head bolt in the drive side thickness tray mounting assembly pictured in Figure 16 for hydraulic slicers and Figure 18 for All-Electric slicers..
4. Lay a straight edge across the blade guide and thickness tray near the drive side end of the blade guide.
5. If the minimum cut is not zero, place a shim equal to the minimum thickness under the straight edge on the thickness tray.
6. Use the thickness control knob and the slice thickness adjustment bolt to bring the blade guide and thickness tray into close alignment.
7. Tighten the hex head bolt that was loosened in step 3 above.

8. Move to the opposite end of the blade guide and repeat steps 3 through 7 for that end of the blade guide.
9. Return to the drive side and recheck the alignment.
10. Tighten the blade guide ball plunger until it bottoms out and back it off 1/8 turn. Repeat this procedure on both ends of the blade guide.

Pusher Bar Adjustment

Adjust the optional product pusher bar to give approximately 3/32" (2.38 mm) clearance between the bar and the band blade tip.

1. Loosen the four mounting bolts located on the bottom of the thickness tray. These four bolts hold the roller guide in position.
2. Loosen the jam nuts on the adjustment bolts.
3. Turn the adjustment bolts until the proper clearance is attained. Make sure the product pusher is parallel to the blade and tighten the jam nuts.
4. Tighten the four mounting bolts.

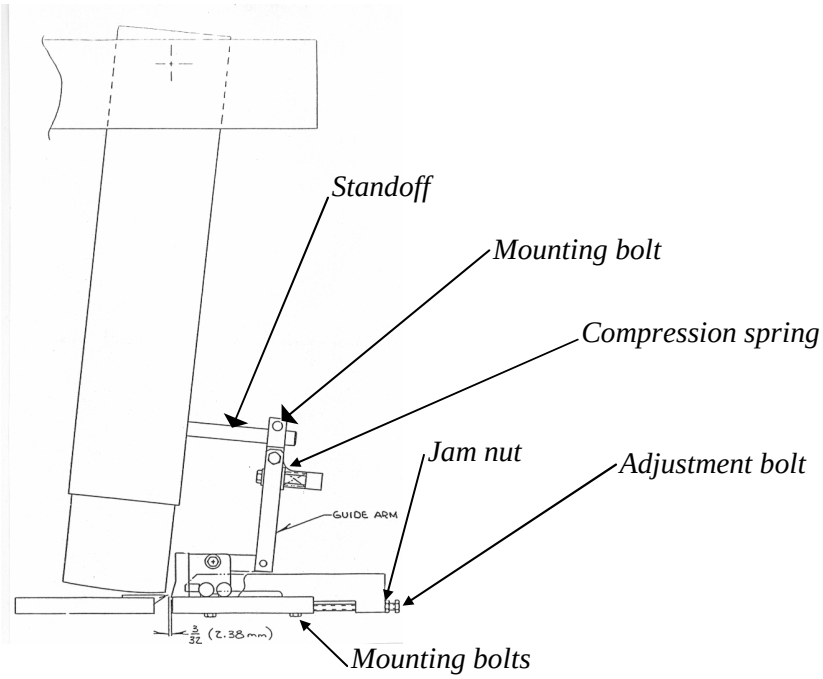


Figure 17. *Product Pusher - Hydraulic Machines*

After the product pusher bar clearance has been set, adjust the bar so that it lightly touches the back of the product holder when the holders are in the rest position. The following procedure details this adjustment. Figure 19 shows the product pusher assembly.

1. Loosen the two mounting bolts that hold the product pusher assembly to the standoff.

2. Press the pusher assembly approximately 1/8" past the point where the pusher bar first contacts the product holder.
3. Tighten the two mounting bolts after the product pusher has been properly adjusted.

Band Blade Installation

The following steps outline the procedure for installing a band blade.

a. Disengage the pull pin and place the product holder box in the extended position. Lock the box in this position using the lock pin.

b. Hydraulic Machines - Rotate the knob on the top of the water applicator pad and remove top of the assembly. Loosen the mounting screws on the blade scraper and rotate them to the open position. Remove the blade edge scraper assembly if it is provided.

b. All-Electric Machines - The blade wiper must be released with the top portion flipped back so the blade can pass over the two outside portions of the blade wiper and under the center portion.

c. Rotate the blade tension handle counterclockwise and press the handle in until the bearing block bottoms out in the housing.

d. Standing by the idle side pulley, carefully place the blade around the drive side pulley and then the idle side pulley.

CAUTION!	Band blades are very sharp--use care when handling and wear recommended cut-resistant safety gloves.

e. Remove the excess slack in the blade by pulling out on the blade tension handle. Tighten the handle until a slight resistance is felt. Starting at one end of the blade guide, carefully insert the blade into the blade guide slot. Repeat the procedure on the other end of the blade guide and in the middle, if necessary. Make sure the blade is seated along the entire length of the slot.

f. Apply tension to the blade by rotating the blade tension handle until the blue line of the spring cage is flush with the housing.

Blade Tracking

Blade tracking refers to the alignment of the band blade as it runs over the blade pulleys. The band blade tracking procedures must be done with a clean blade guide and blade pulleys. ??Remove both the blade scraper and the water applicator pad during these procedures. Proper tracking is related to the following items.

1. *Blade pulleys* - Check the blade pulley crowns weekly for wear. Inability to track the blade is usually an indication of pulley wear. If the back lip of the pulley shows excessive wear, blade tracking has been overadjusted. Since the drive side pulley normally wears the most, it should be replaced first if a tracking problem develops. If the problem persists, replace the idle side pulley.

2. *Blade pulley bearings* - Replace the bearings in the drive side pulley if any free movement is detected. If any movement is detected in the idle side drive pulley, replace the entire sealed bearing assembly.
3. *Blade guide* - The blade guide must be clean and adjusted so that the blade does not touch the back of the blade guide slot. Use the blade guide scraper regularly to ensure that the blade guide slot stays clean.

If a new blade will not track properly and the above items have been checked, try a second blade before replacing the pulleys.

Idle Side Blade Tracking

NOTE: Always check the blade tracking with the blade rotating in the proper direction. *Blade travel is from the idle side through the blade guide to the drive side.*

1. Rotate the pulley by hand. The blade should track to the back lip of the pulleys and seat into the blade guide slot.
2. The blade will lightly touch the back lip of the pulleys when it is tracking properly.

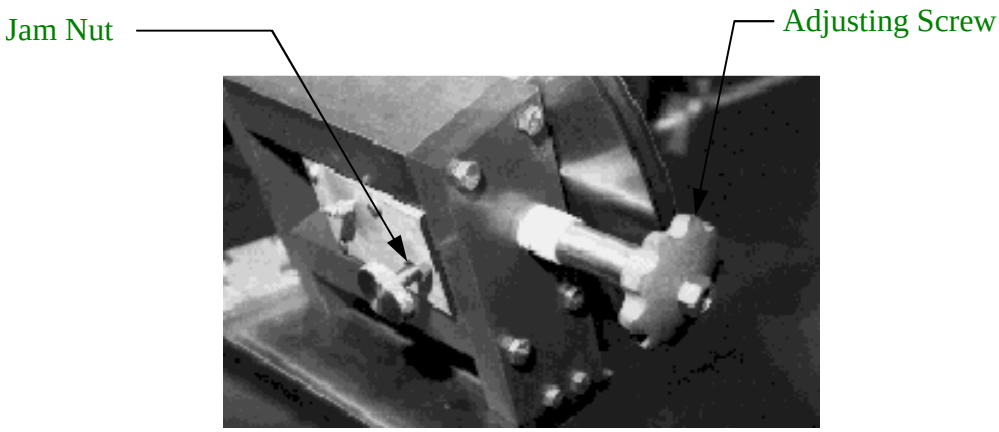


Figure 18. *Idle Side Tracking Adjustments(Non-Sealed Bearings).*

3. Loosen the jam nut and rotate the adjusting screw until the blade is tracking properly. Tighten the jam nut when the tracking adjustment is complete. Figure 20 shows the location of the jam nut and the adjusting screw on the back of the idle side bearing block assembly.

Drive Side Band Blade Tracking - Hydraulic Slicers

The drive side blade pulley is preset at the factory and only needs to be reset if the pulley assembly has been off the slicer or if the pulleys have worn significantly. The following procedure details the adjustment of drive side tracking.

1. Remove the blade guide and back tray.
2. Install blade.

3. Track blade on idle side pulley so that it is approximately 1/8" away from the back lip of the pulley.
4. Loosen the four 5/16 inch bolts on the top of the drive side bearing block but not the 1/2 inch pivot bolt in the center.
5. Follow the same procedure for the bolts on the bottom of the bearing block.
6. While rotating the blade and pulley by hand, push the motor away from you to track the blade to the back of the pulley. Pull the motor towards you to track the blade to the front of the pulley.
7. When the tracking is correct tighten the four mounting bolts on the top and bottom of the bearing block assembly.
8. Retrack idle side to back of idle side pulley.
9. Reinstall the blade guide and back tray.

Drive Side Band Blade Tracking - All-Electric Slicers

1. Remove the blade guide and back tray.
2. Install blade.
3. Track blade on idle side pulley so that it is approximately 1/8" away from the back lip of the pulley.
4. Slightly loosen the four bolts underneath the drive side bearing block. They should be tight enough to hold the motor in position but loose enough to allow it to be moved with the adjustment bolt.
5. Loosen the jam nut on the adjustment bolt.
6. Turn the adjustment bolt to track the blade. Counterclockwise moves the blade to the back lip of the drive pulley.
7. When the tracking is correct tighten the four mounting bolts underneath the drive side bearing block.
8. Slightly tighten the jam nut.

> CAUTION: If the jam nut is overtightened it will affect the blade tracking.

8. Retrack idle side to back of idle side pulley.
9. Reinstall the blade guide and back tray.

Bearing Replacement

Bearing replacement procedures for both drive and idle sides apply only to hydraulic slicers. Furthermore, the idle side bearing removal and replacement only applies to hydraulic slicers with non-sealed type bearings.

All-Electric slicers have the drive pulley mounted directly on the motor shaft and the idle side pulley uses sealed type bearings that typically do not need replaced. If bearing problems develop with either the drive or idle side, contact the Grote Company Service Department for assistance.

Drive Side Bearing Removal - Hydraulic Slicers

1. Remove the four mounting bolts holding the motor to the flange mounting collar.

> CAUTION: The motor will drop at this time if it is not supported. The motor can be balanced in the hole through the frame.

2. Remove the entire bearing block assembly by removing the five mounting bolts on the top and bottom of the assembly.
3. Place the bearing block assembly on a workbench and remove the coupling by loosening the set screw through the slot in the flange mounting. Then remove the square key in the shaft.
4. Remove the flange by removing the four cap screws holding it in place.
5. Remove the bearing locknut by first loosening the set screw and then removing the nut.

> NOTE: A punch can be inserted through one of the holes in the pulley to "lock" the pulley in place and allow the removal of the locknut.

6. Pull the shaft\pulley assembly out of the bearing block.
7. Remove the bearing housing cap.
8. Loosen the two set screws in the sides of the bearing block and offset the inner race spacer.
9. Gently tap out the old bearings.
10. Remove the inner and outer race spacers.

Drive Side Bearing Replacement - Hydraulic Slicers

Carefully remove one of the seals on each of the new bearings.

1. Press the double row bearing into the front of the bearing block with the remaining seal facing out.
2. Replace the outer race spacer in the rear of the bearing block and tighten the two set screws in the sides of the bearing block.

> CAUTION: The set screws must properly seat into the groove on the outer race spacer or the spacer will be damaged.

3. Insert the inner race spacer.
4. Press the single row bearing into the rear of the bearing block with the remaining seal facing out.
5. Replace the bearing housing cap.
6. Insert the pulley shaft assembly into the bearing block assembly.

7. Replace the bearing locknut using a punch through the pulley for leverage. Tighten the set screw in the locknut.
8. Attach the flange mount collar to the bearing block assembly using the four cap screws.
9. Place the key in the shaft and replace the coupling. Tighten the set screw in the coupling through the slot in the flange mount collar.
10. Insert the bearing block assembly in the slicer. Insert the bottom shoulder screw first. Snug the shoulder screw.
11. Snug the remaining bolts into their holes.
12. Carefully align the couplings and install the electric motor using the four mounting bolts.
13. Adjust the drive side pulley tracking.

Idle Side Bearing Removal - Non-sealed bearings - Hyd Slicers

NOTE: This section only applies to machines equipped with the *non-sealed* type idle side bearing block. Sealed type bearings should last the life of the machine. If bearing wear is noted the entire assembly should be replaced. Contact the Grote Service Department for assistance.

1. Remove the blade tension handle, the spacer, the spring cage, and the spring.
2. Remove the side mounting block by removing the four bolts in the side of the block and the two recessed bolts in the bottom of the block.
3. Remove the top slide block by removing the two remaining bolts. Remove the Delrin slide pads.
4. Remove the bearing block and pulley assembly and place it on a workbench.
5. Remove the bearing housing rear cap.
6. Loosen the set screw in the bearing locknut and remove the locknut.
7. Pull the pulley/shaft assembly out of the bearing block.
8. Remove the bearing housing front cap.
9. Loosen the set screw in the side of the bearing block and offset the inner race spacer.
10. Gently tap out both sets of bearings.
11. Remove the inner and outer race spacers.

Idle Side Bearing Replacement - Non-sealed Bearings - Hyd Slicers

NOTE: This section only applies to machines equipped with the *non-sealed* type idle side bearing block. On machines with sealed type units the entire assembly should be replaced if bearing wear is noted.

Carefully remove both of the seals from the single row set of bearings and one seal from the double row set of bearings.

1. Press the double row set of bearings into the front of the bearing block with the remaining seal exposed.
2. Insert the outer race spacer into the rear of the bearing block and tighten the set screw.

CAUTION:	The set screw must properly seat into the groove on the outer race spacer or the spacer will be damaged.

3. Insert the inner race spacer into the bearing block.
4. Press the single row bearings into the rear of the bearing block.
5. Replace the front bearing housing cap.
6. Insert the pulley and shaft assembly into the bearing block and replace the bearing locknut.
7. Tighten the set screw in the bearing locknut.
8. Install the rear bearing housing cap.
9. Place the bearing block assembly into position on the slicer and replace the Delrin slide pads.
10. Replace the top slide block.
11. Replace the side mount block.
12. Install the spring, spring cage, spacer, and tension handle of the tensioning bolt.
13. Tighten all bolts.
14. Adjust the blade tracking.

Clutch Maintenance

Clutch Coil Adjustment

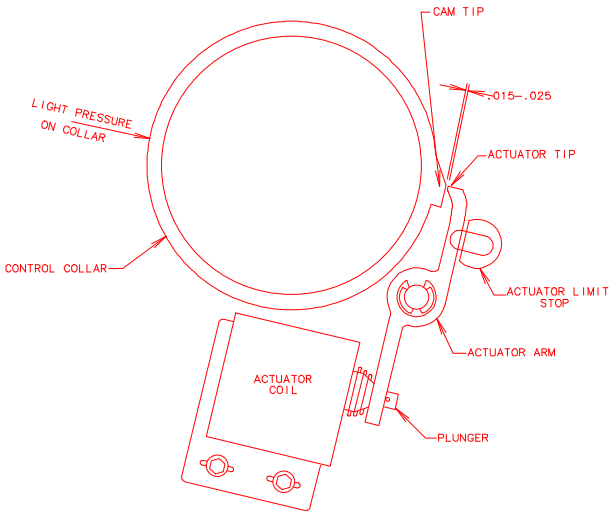


Figure 19. *Clutch-Brake.*

Refer to Figure 22.

1. Turn the machine off and disconnect the power supply.
2. Loosen the actuator limit stop assembly and move it to the position farthest away from the actuator arm. Temporarily tighten the adjustment bolt.
3. Rotate the control collar until the cam tip is directly adjacent to the actuator tip.
4. Apply light pressure to the control collar in the direction shown. This pressure will remove any "play" in the control collar. Depress the plunger in the actuator coil fully until it bottoms. While holding the plunger fully depressed, check the clearance between the actuator tip and the cam tip. If the clearance is not in the range shown, loosen the coil mounting bolts and slide the coil assembly until the proper clearance is obtained. Tighten the coil mounting bolts.
5. Adjust the actuator limit stop while the plunger is fully depressed. The actuator limit stop is adjusted by loosening the mounting bolt and sliding the limit stop towards the actuator arm until it just makes contact. Tighten the mounting bolt for the actuator limit stop.

NOTE: Premature failure of the coil is avoided by adjusting the coil and actuator limit stop so that the plunger bottoms at the same time as the actuator.

Clutch Coil Replacement

Remove the two screws holding the actuator coil in place and unplug the two wires from the coil. The old coil can now be removed and the new coil installed. After installation adjust the coil according to the procedure listed above.

Clutch Control Collar Adjustment

Note:	To ensure proper stop position, brake must be locked up before proceeding with the following steps.

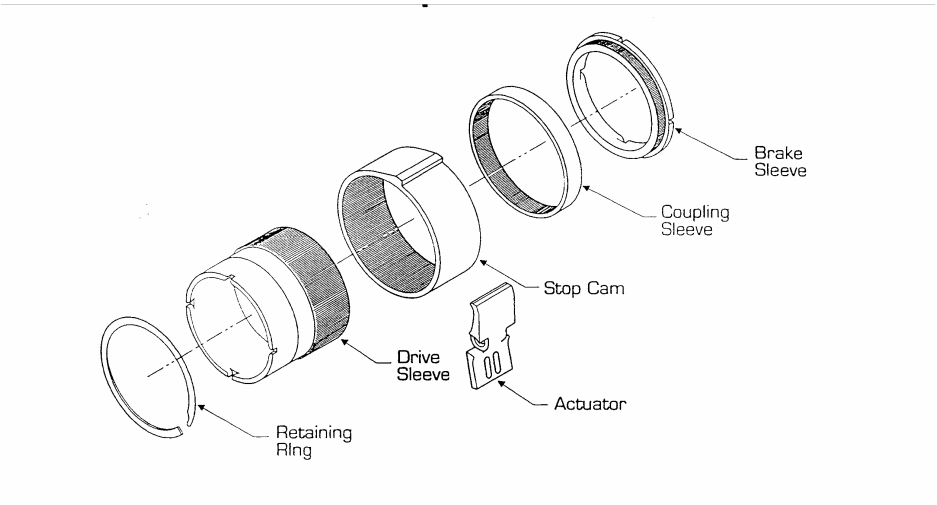


Figure 20. *Clutch Control Collar Adjustment.*

See Figure 23.

1. Work retaining ring out of groove and slide forward on sleeve.
2. Slide stop cam off splines, rotate to desired stop position and slide back on splines. Hold the actuator pawl clear during this operation.
3. Slide retaining ring back into groove.

Tightening Proximity Switches

CAUTION:	Do not overtighten the jam nuts on proximity switches (torque should not exceed 15 ft.lbs.). Overtightening may cause damage to the internal components of the switch and housing.

Proximity switches are used on this machine. The sensitivity of these switches is determined by the physical distance between the tip of the switch and the object to be detected. This distance is adjustable by loosening the threaded nuts (one or two) on the switch housing, moving the switch in or out on the mounting bracket, and then retightening the jam nuts. *If the nuts are overtightened after adjusting the proximity switch they may cause the switch to fail.*

Target Sensor

The target sensor detects targets on the conveyor as they approach the slicing heads. When a target is detected a start signal is sent to the controls on the slicer which causes the slicer to stroke when the target reaches the slice zone. Sensitivity of the sensor must be adjusted so it correctly detects targets as they pass under it. Two different sensors are used on slicers--the Banner Sensor and the Fiber-Optic Sensor. Adjustments for each of them are described below.

Banner Sensor

The red LED next to the sensitivity control indicates when a target is being detected. The sensitivity must be set so that targets are accurately detected without either of the following conditions occurring:

1. Continuous or overdetection (sensitivity too high).
2. Intermittent or underdetection (sensitivity too low).

NOTE: Eye sensitivity should be set as high possible without detecting false targets.

Decrease the numbers in the eye sensitivity control to reduce the sensitivity and increase the numbers to increase the sensitivity. The red LED above the eye sensitivity control lights whenever the eye is sensing a target.

The sensitivity needs to be increased if targets are *not* being "seen" and decreased if the conveyor belt is *being* "seen".

For initial adjustment, find the high end setting by adjusting the knob higher (clockwise) until the red light comes on. The eye is now sensing the conveyor. Then turn the adjusting knob lower (counterclockwise) until the light just goes out. The eye is now at the low setting and focused just above the conveyor. Set the sensitivity between the high and low end settings.

Fiber Optic Sensor

Sensor Installation

The sensor is positioned above the conveyor where it detects the targets onto which the machine slices product. An amplifier is located inside the control enclosure. The amplifier has four switches that are set before shipment. These settings are:

Switch	Setting
Max-Set-Run	Run
L. On-D. On	L. On
Norm-Hi	Norm
Off Dly-Off	Off

Two fiber optic cables run from the sensor to the amplifier. One cable has a solid fiber; the other a multi-stranded fiber. The solid fiber cable should be inserted into the hole with an arrow pointing out from the side of the amplifier. The multi-stranded fiber cable should be inserted into the hole with the arrow pointing in from the side of the amplifier.

Teaching the Photoeye

For each product that is run, the photoeye must be taught to recognize the targets on the conveyor belt. This teaching cycle is controlled by the PLC and requires eight seconds to perform.

Before starting the conveyor, place targets on the belt as follows:

1. Place a sufficient number of targets on the belt so that it will take at least three seconds for all of them to pass under the eye.
2. Position the first target in the pattern far enough away from the eye so that it will not reach the eye for at least five seconds after the conveyor is started.
3. Space the targets the same as they will be during actual production.

To perform the teaching cycle:

1. Place the machine into "Teach Mode".
2. Start the conveyor and when the first target is five seconds away from the eye, press F7 to activate the cycle.
3. The eye should not see any targets for five seconds and then see targets for the next three seconds after which the cycle automatically ends.

The message "Teaching Photoeye" appears on the Operator Interface screen during the teaching cycle. Repeat the procedure for each lane on multi-lane slicers.

Resetting the Photoeye

If the above procedure for teaching the photoeye is not successful, it may be necessary to reset the photoeye. If the green LED on the amplifier is flickering, instead of solidly on, this indicates that the contrast between the target and the conveyor is marginal and that the photoeye needs to be reset.

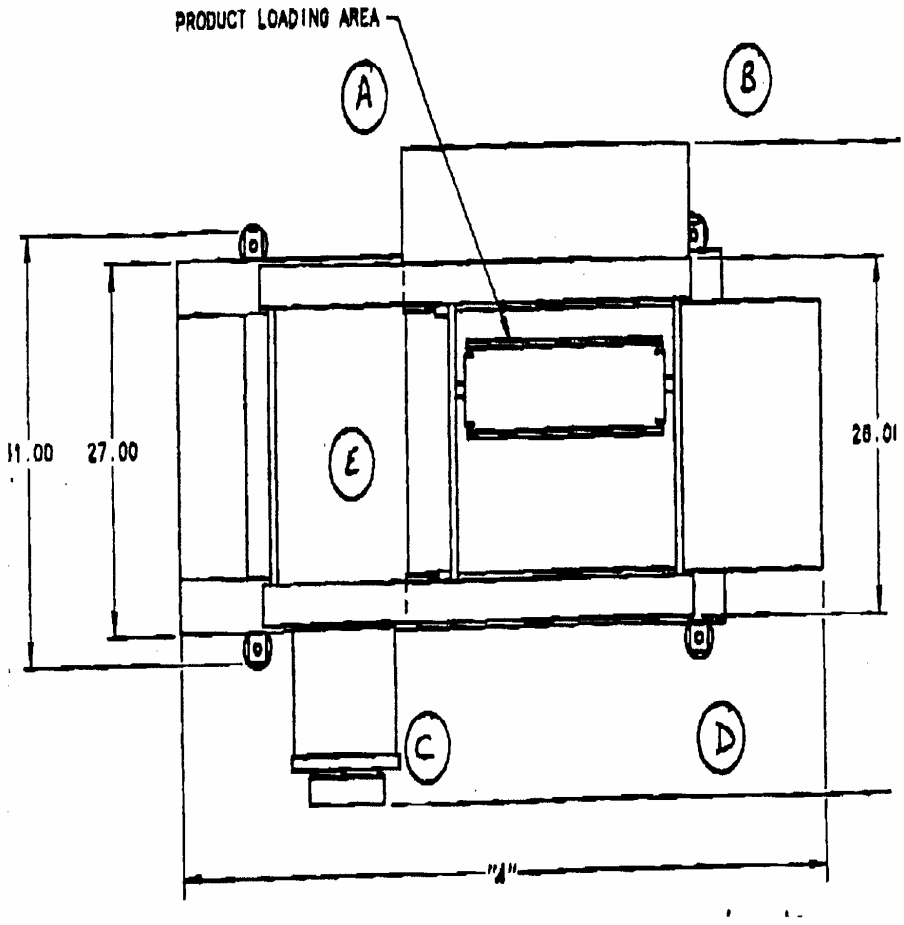
Resetting the photoeye requires two operators. To reset:

1. Move the Max-Set-Run switch to the SET position.
2. Position one operator at the fiber-optic photoeye.
3. Position the second operator at the fiber-optic amplifier located in the control enclosure.
4. The operator near the fiber-optic photoeye should now completely cover the tip of the fiber-optic eye with his finger or some other object and hold this position.
5. The second operator should push the yellow pushbutton located on the amplifier once, and then release.
6. The operator near the fiber-optic photoeye should now remove his finger or other object from the tip of the sensor.
7. The second operator at the fiber-optic amplifier should push the yellow pushbutton a second time and then release.

8. The above procedure resets the memory on the intelligent fiber-optic amplifier so that the highest contrast of light levels is seen ("no target" versus complete darkness).

Noise Characteristics - Hydraulic Slicers

The noise levels of Models 517, 522, and 530 Slicer/Applicators have been measured at various positions around the slicer. The data shown below illustrates the positions and lists the decibel levels of the noise.



Tested in outdoor open space, background noise 68/74 db.
Noise meter set at a height of 1.6 metres.
Test settings - C weighted, slow response.

A	83 db
B	84 db
C	80 db
D	81 db
E	85 db @ 300 mm above machine.

Troubleshooting Charts

This section contains troubleshooting charts for use when the slicer is not operating properly. Go to the chart that describes your trouble condition and follow the steps outlined on the chart. Charts 1-11 deal with problems with getting the product to slice correctly. Charts 12-16 deal with problems with machine operation.

Chart 1. Product Thickness Varies From Side to Side.

Chart 2. Product Thickness Varies From Front to Back.

Chart 3. Product Not Stacking or Laying Down Properly.

Chart 4. Excessive Product Scrap.

Chart 5. Product Slinging.

Chart 6. Product Curling or Twisting.

Chart 7. Product not Releasing or Cutting Cleanly.

Chart 8. Rough or Chafed Product.

Chart 9. Product Fracturing.

Chart 10. Product Tailing.

Chart 11. Product Not Slicing or Skipping.

Chart 12. Pump Won't Run or Pump Pressure Low (Hydraulic Slicers).

Chart 13. Blade Won't Run.

Chart 14. Pendulum Won't Move.

Chart 15. Breaking Blades.

Chart 16. Won't Count or Dead Space.

Chart 1: Product Thickness Varies From Side To Side.

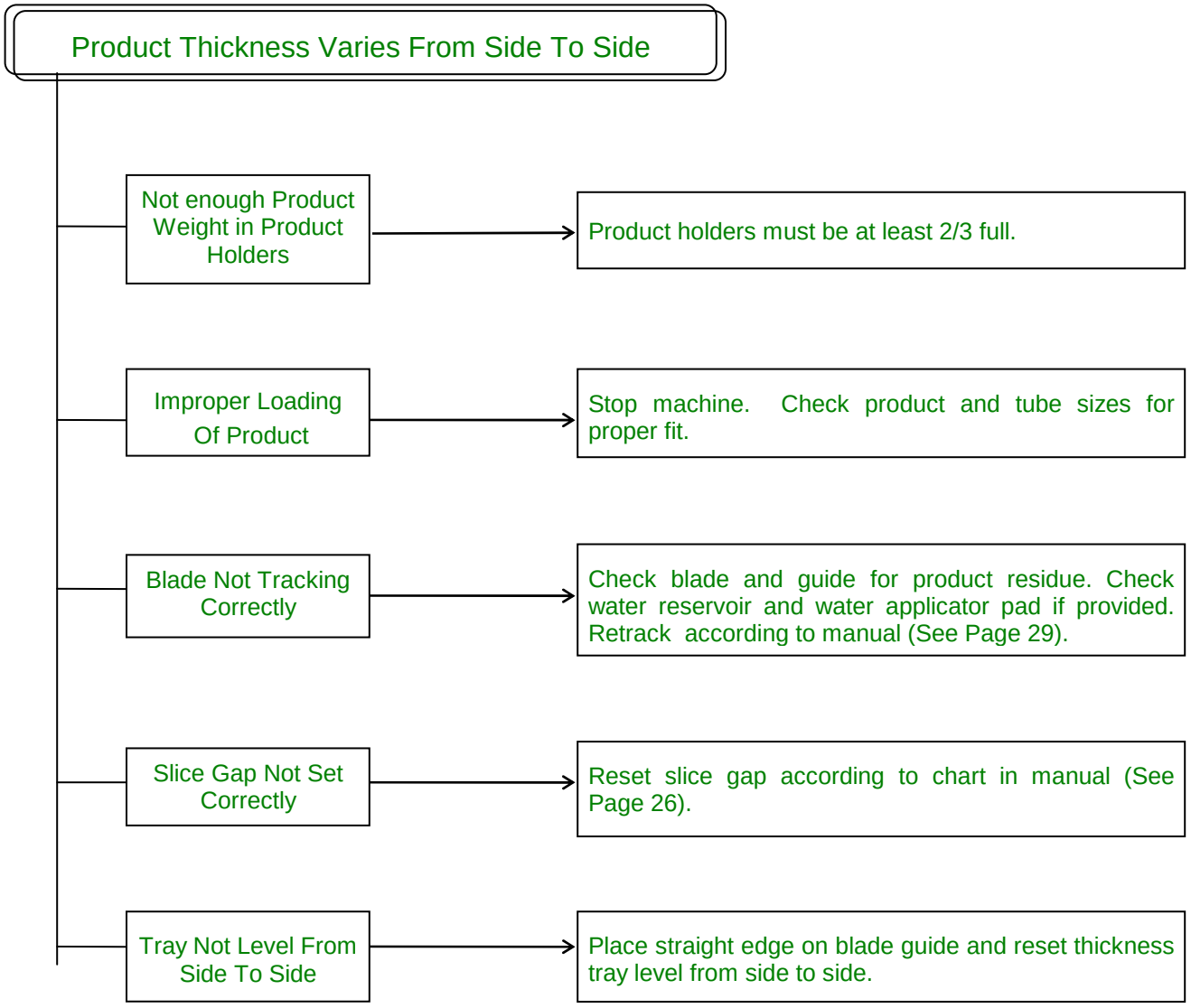


Chart 2: Product Thickness Varies From Front To Back

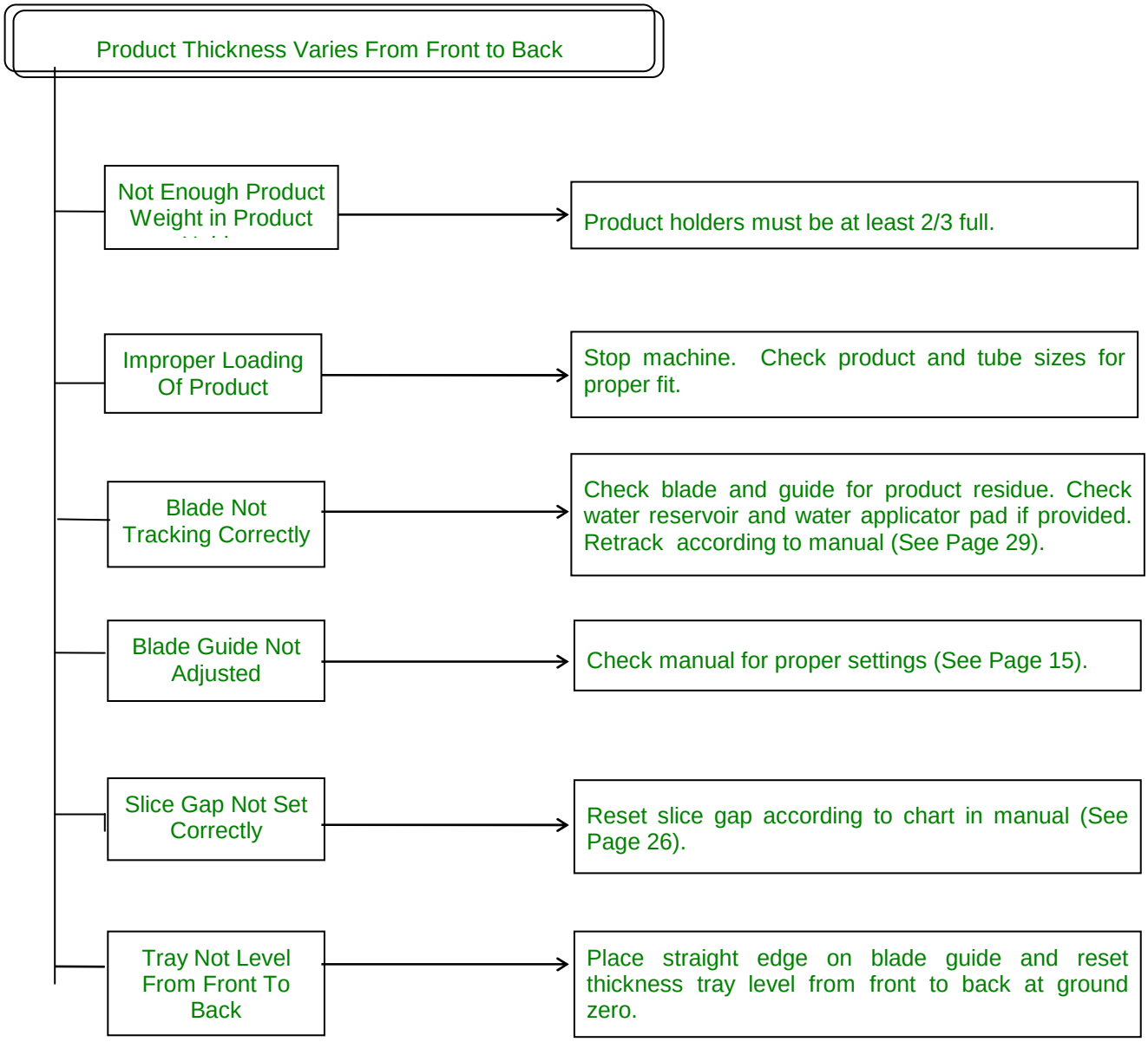


Chart 3: Product Not Stacking Or Laying Down Properly

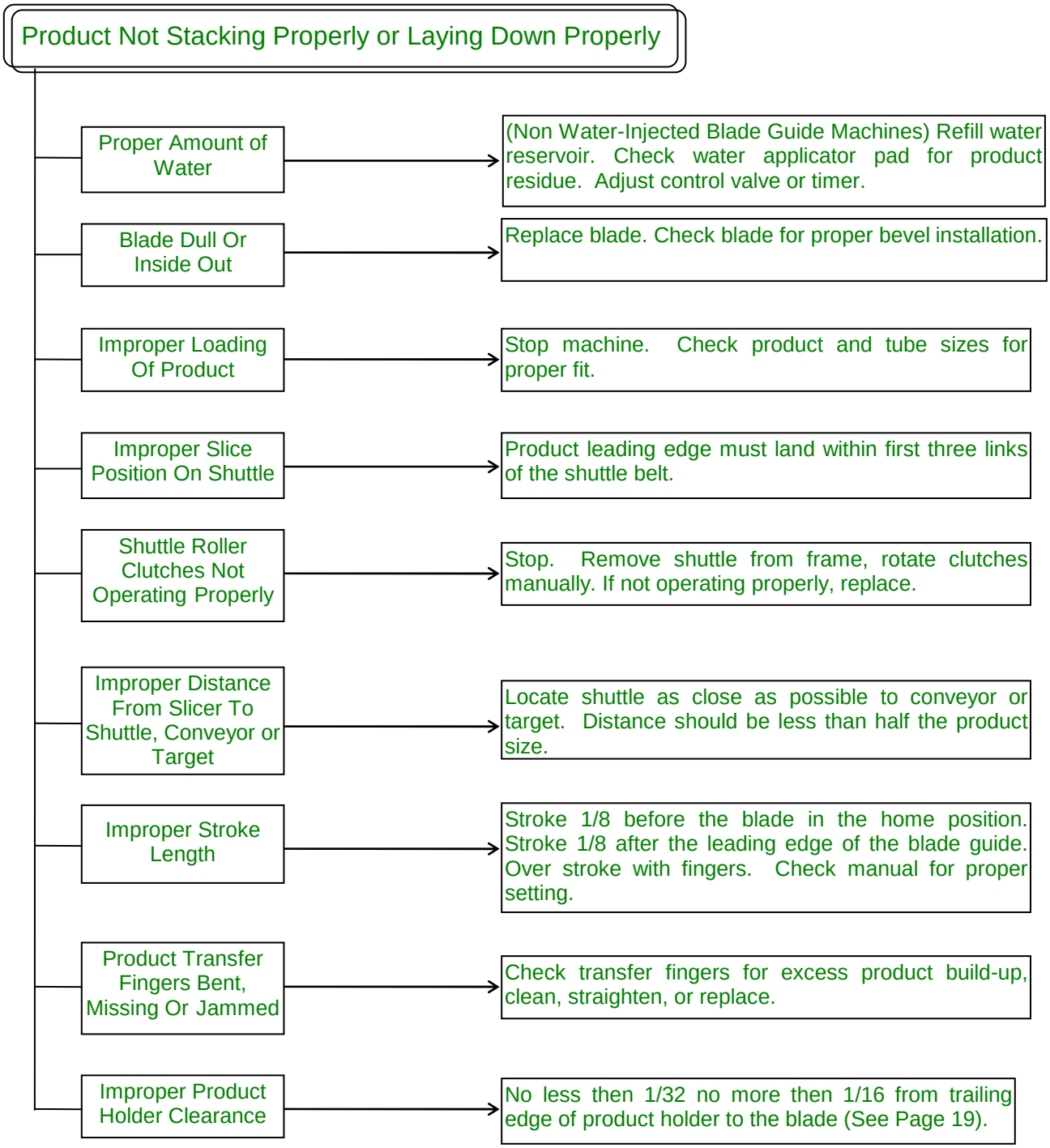


Chart 4: Excessive Product Scrap

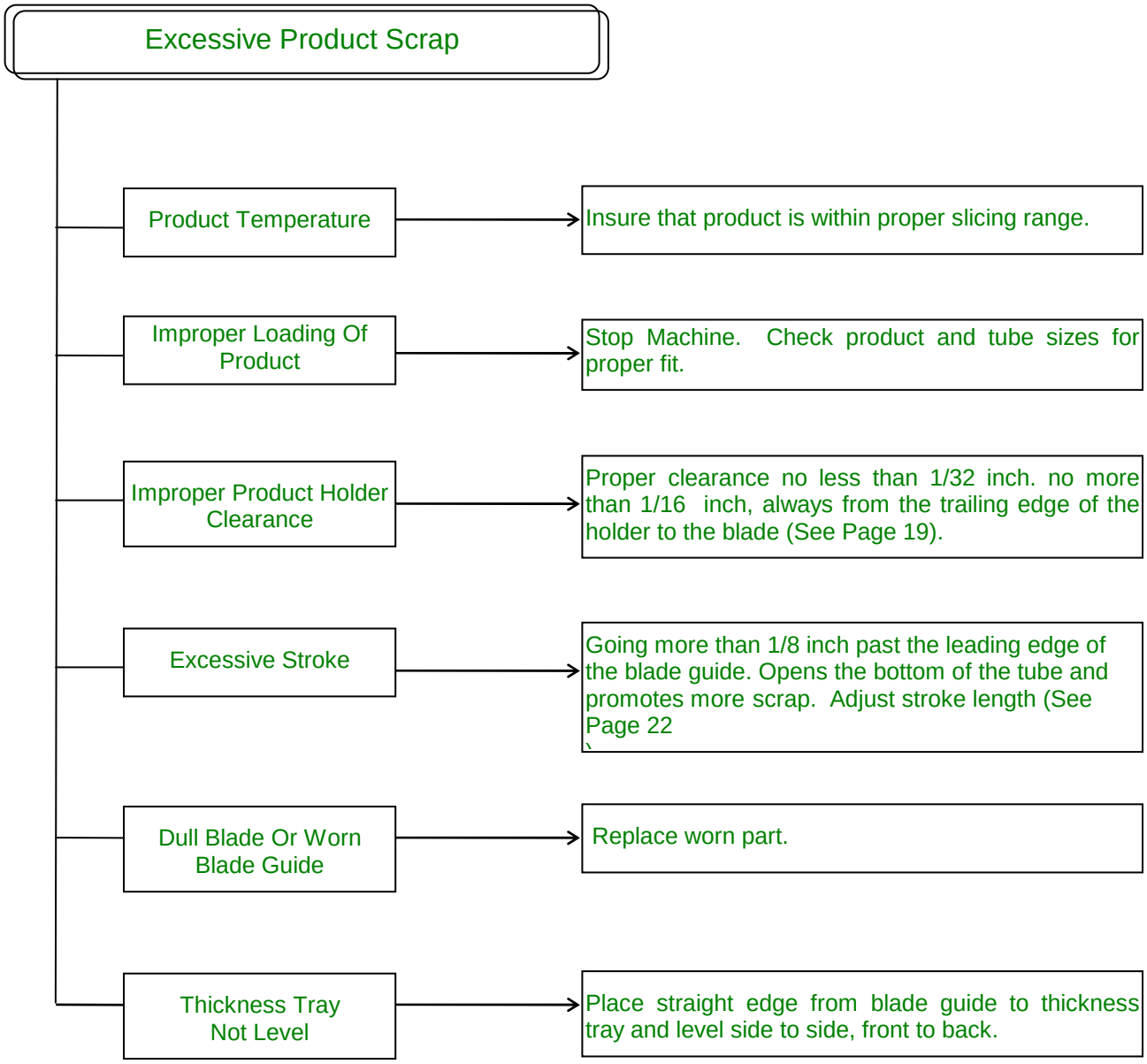


Chart 5: Product Slinging

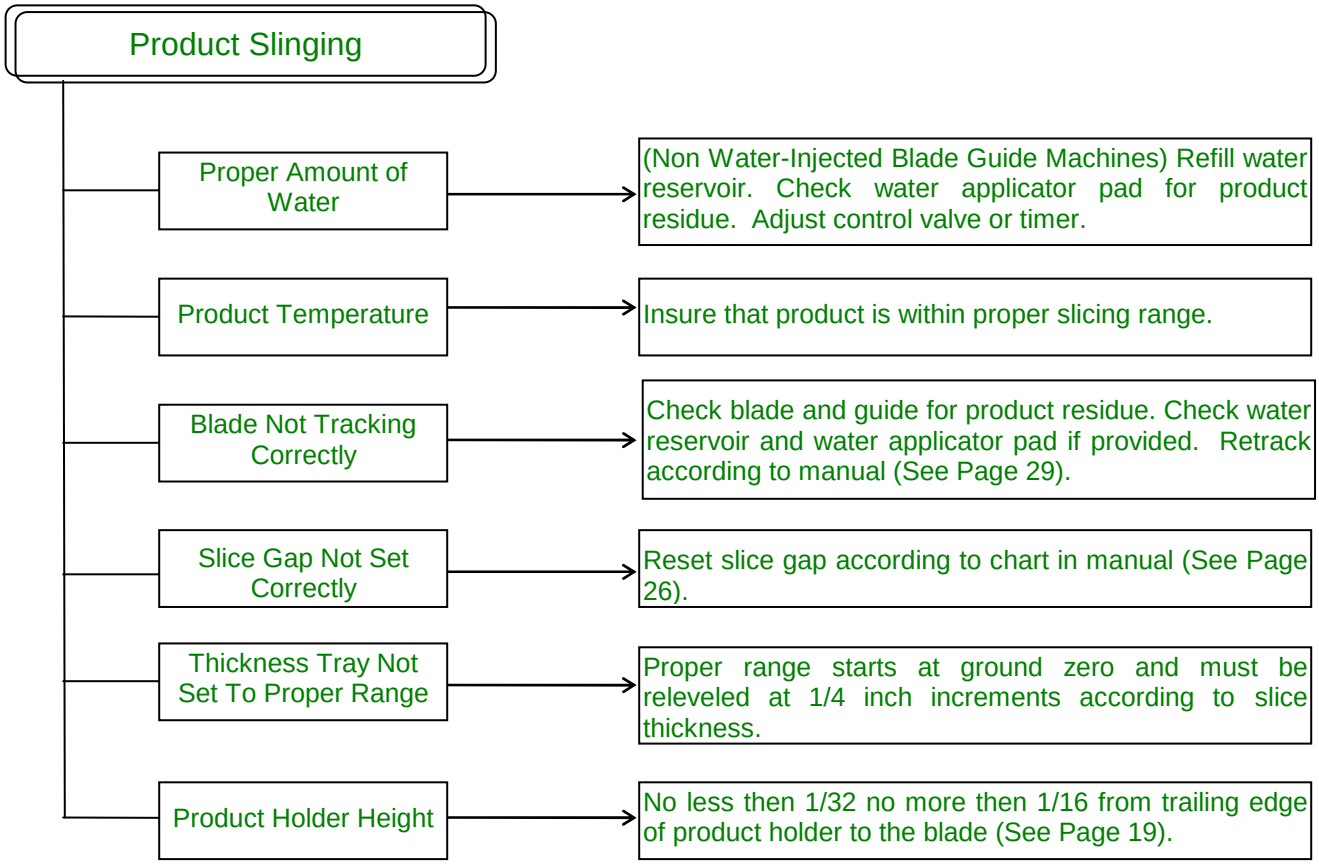


Chart 6: Product Curling Or Twisting

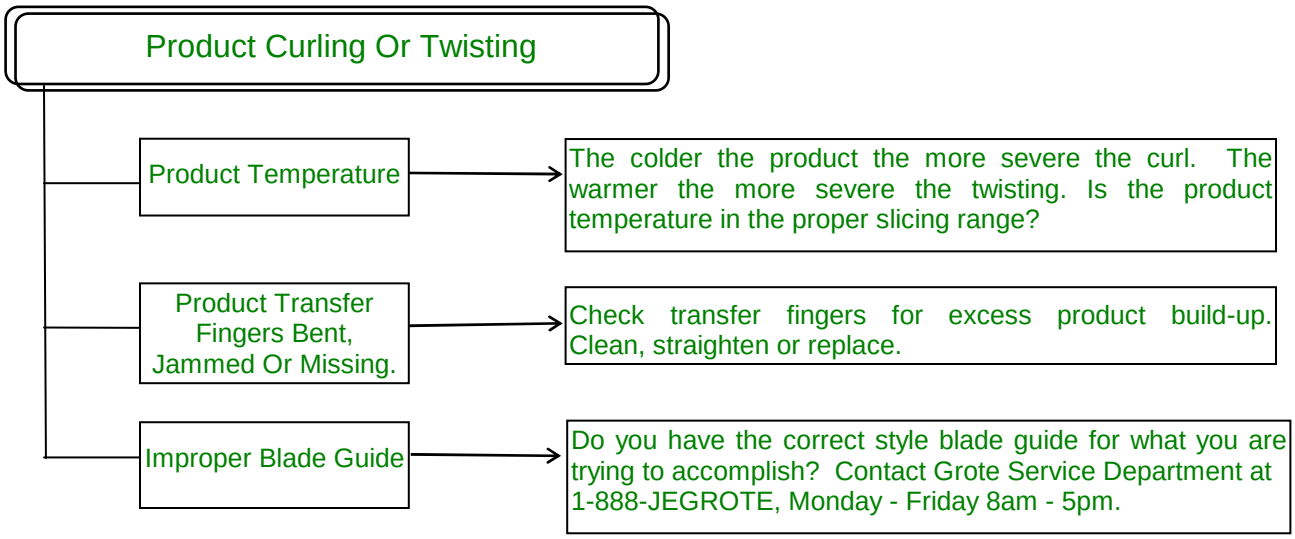


Chart 7: Product Not Releasing Or Cutting Cleanly

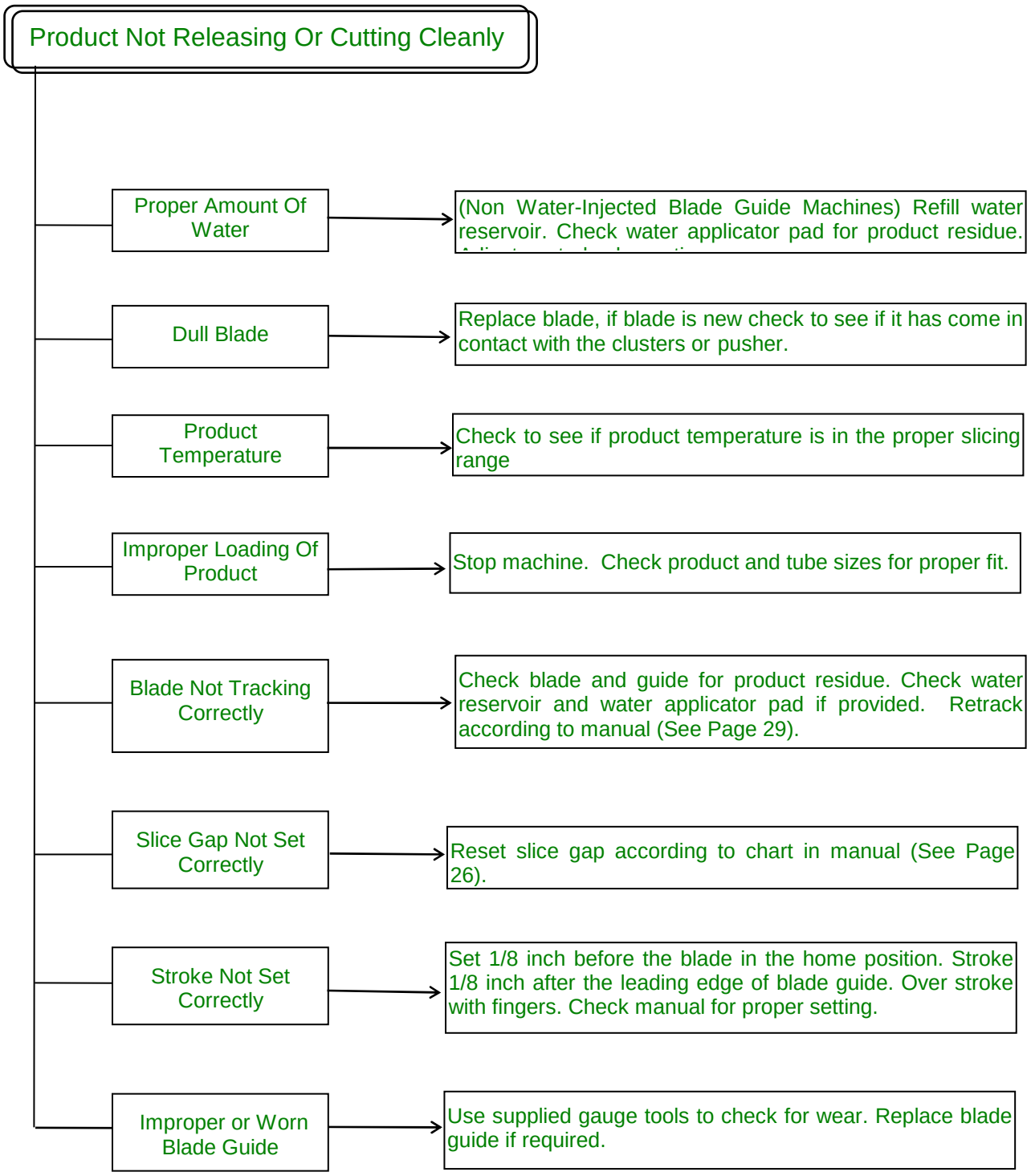


Chart 8: Rough Or Chafed Product

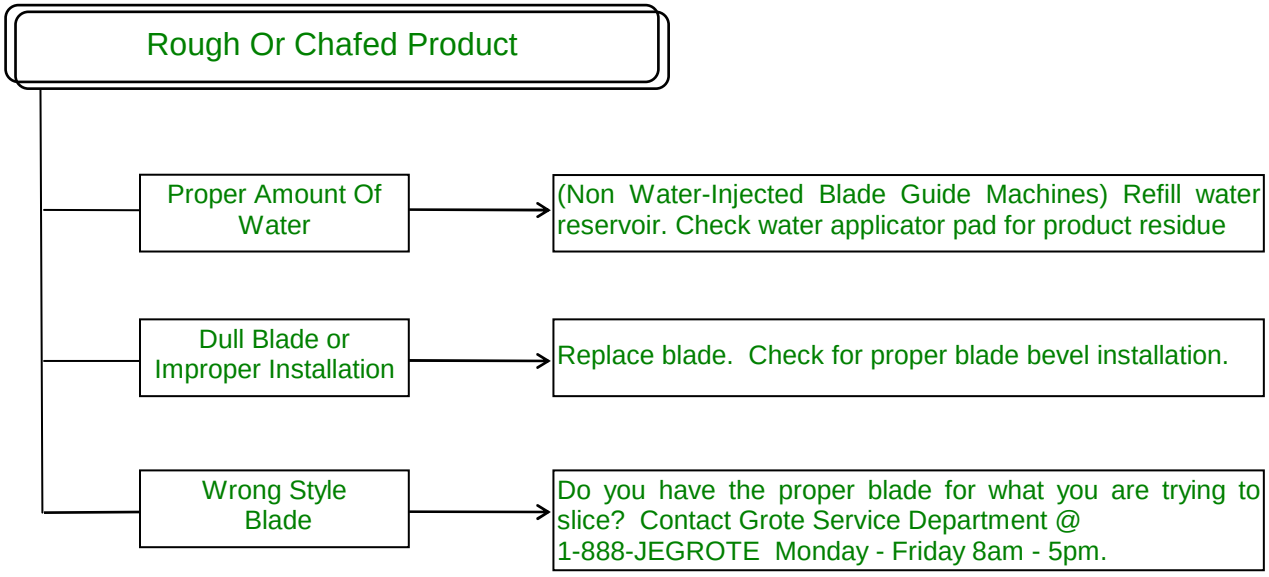


Chart 9: Product Fracturing

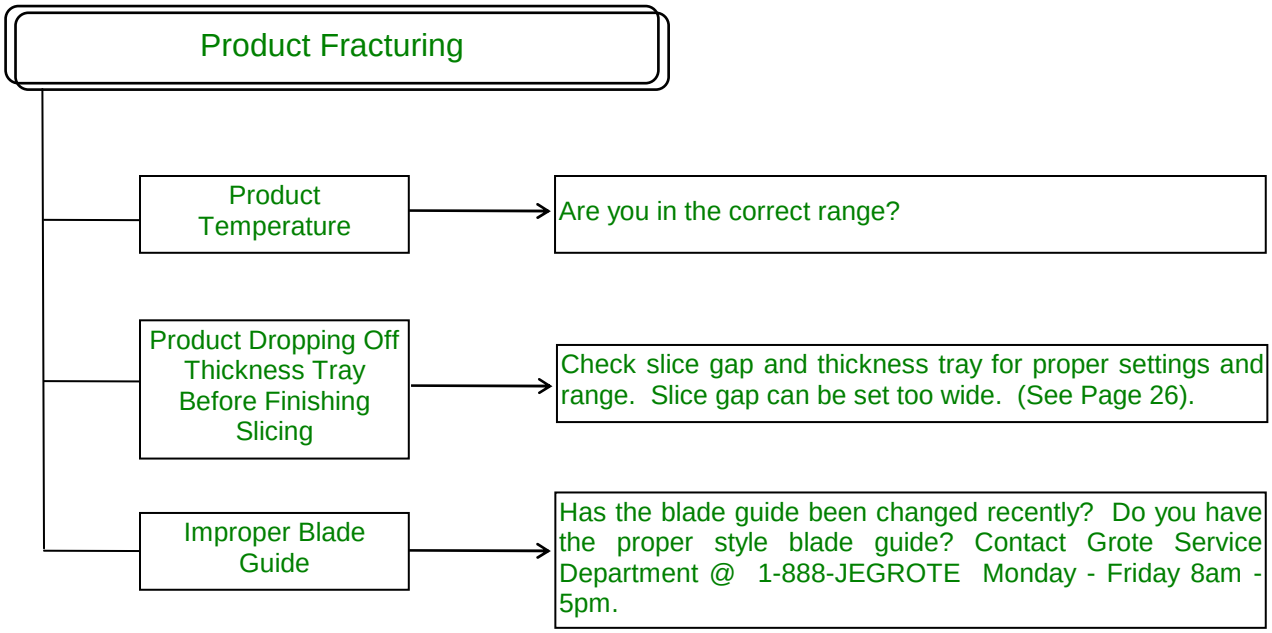


Chart 10: Product Tailing

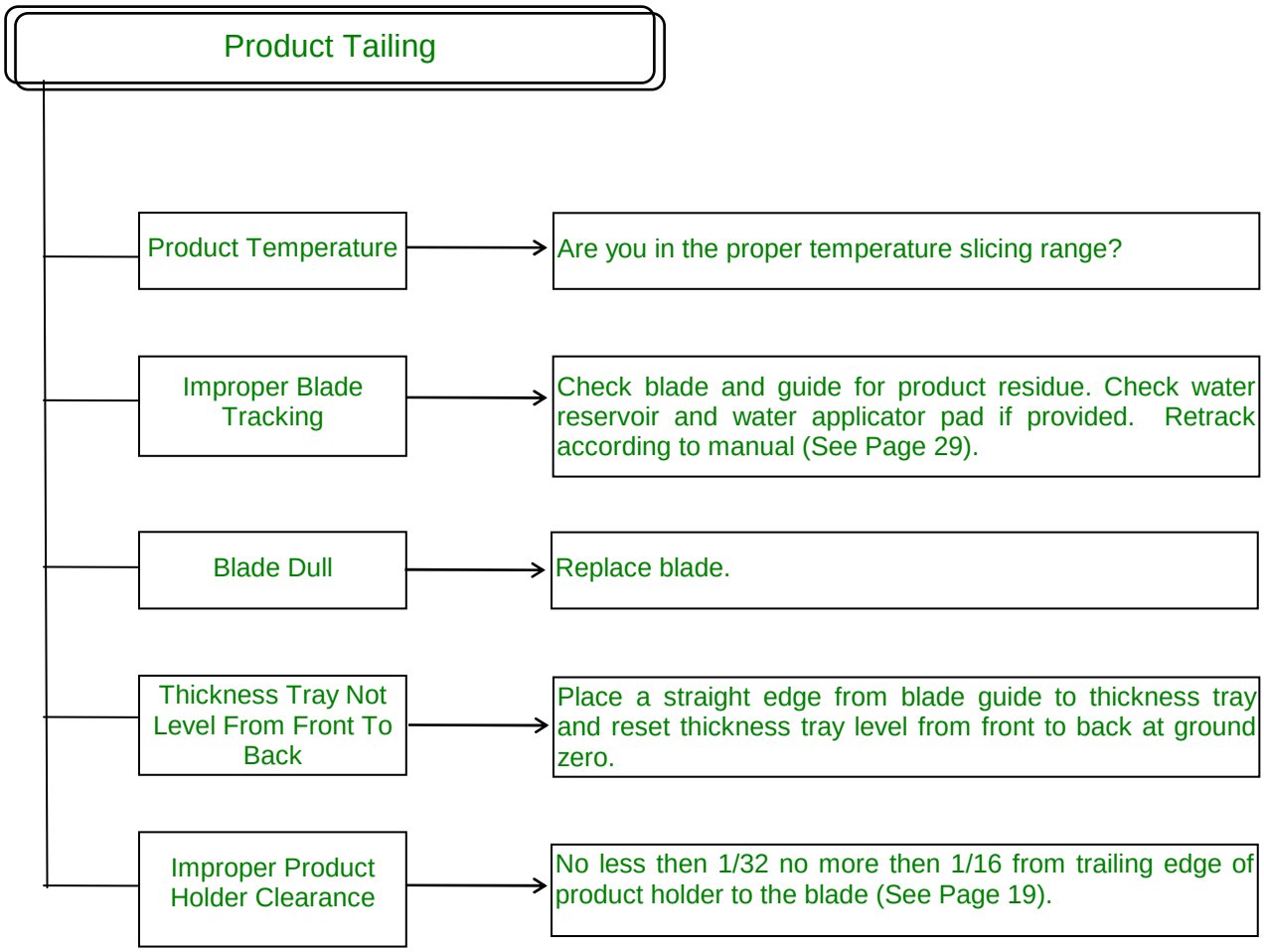


Chart 11: Product Not Slicing Or Skipping

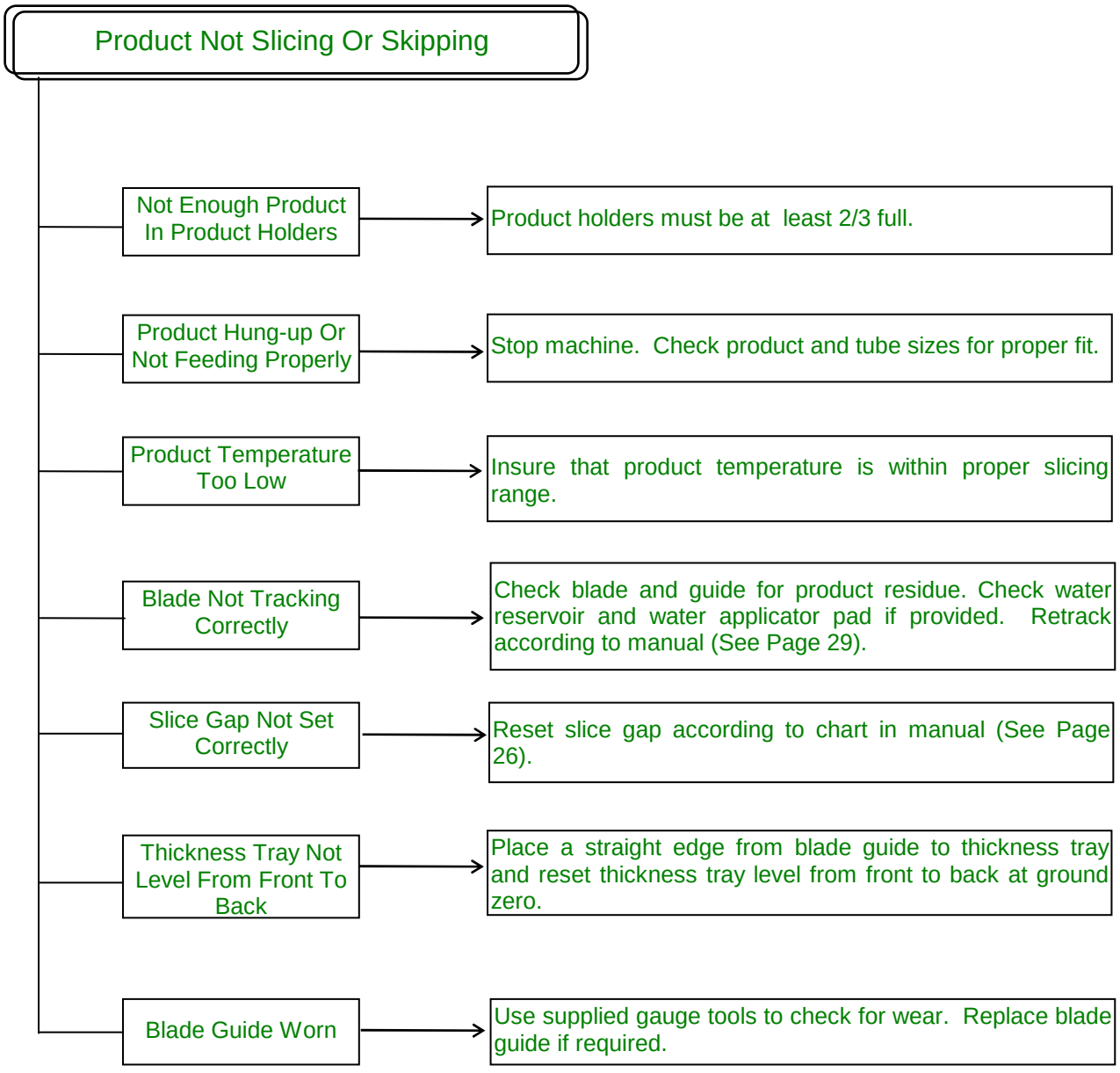


Chart 12: Pump Won't Run or Pump Pressure Low(Hyd Slicers)

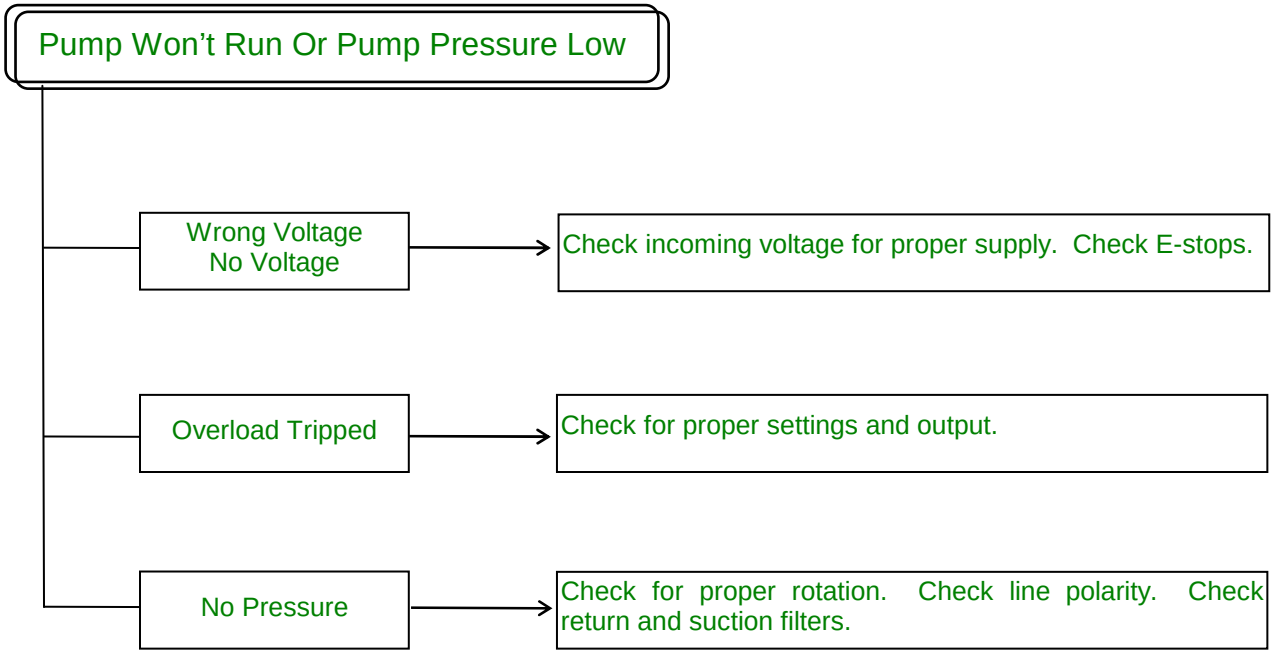


Chart 13: Blade Won't Run

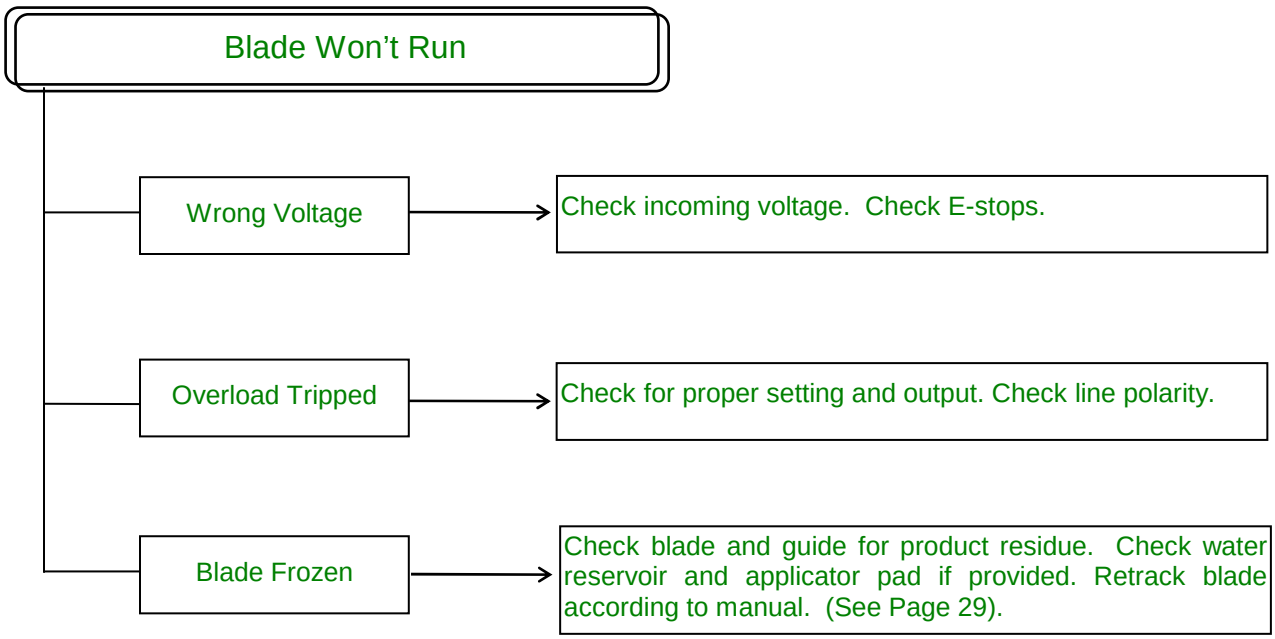


Chart 14: Pendulum Won't Move

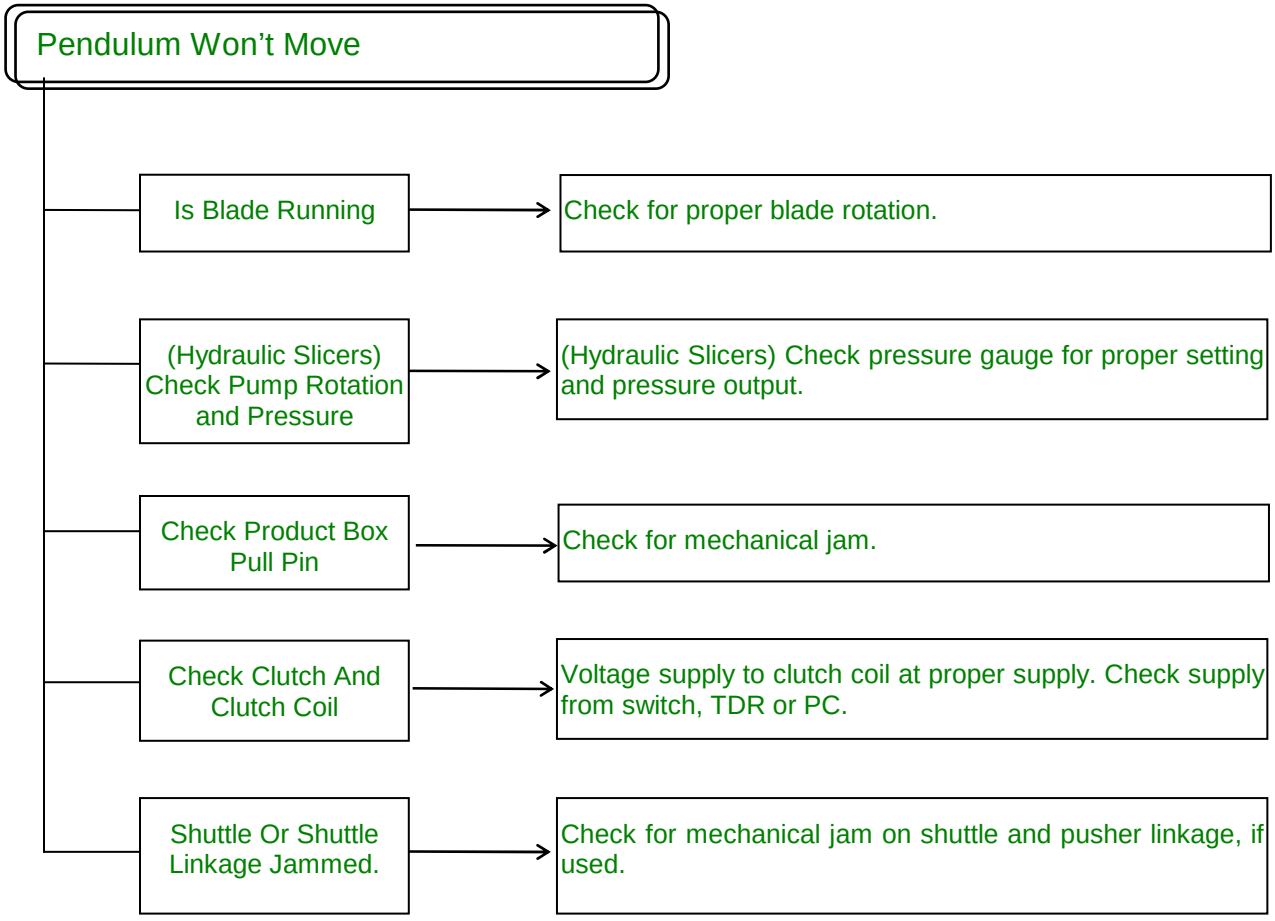


Chart 15: Breaking Blades

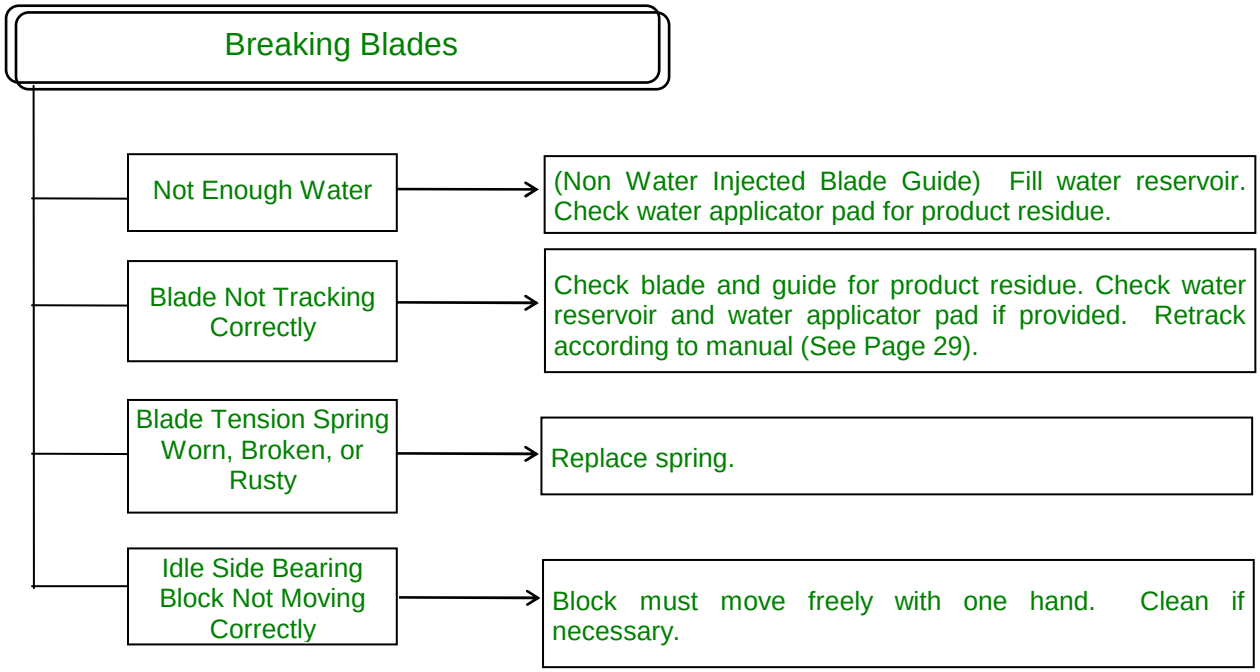
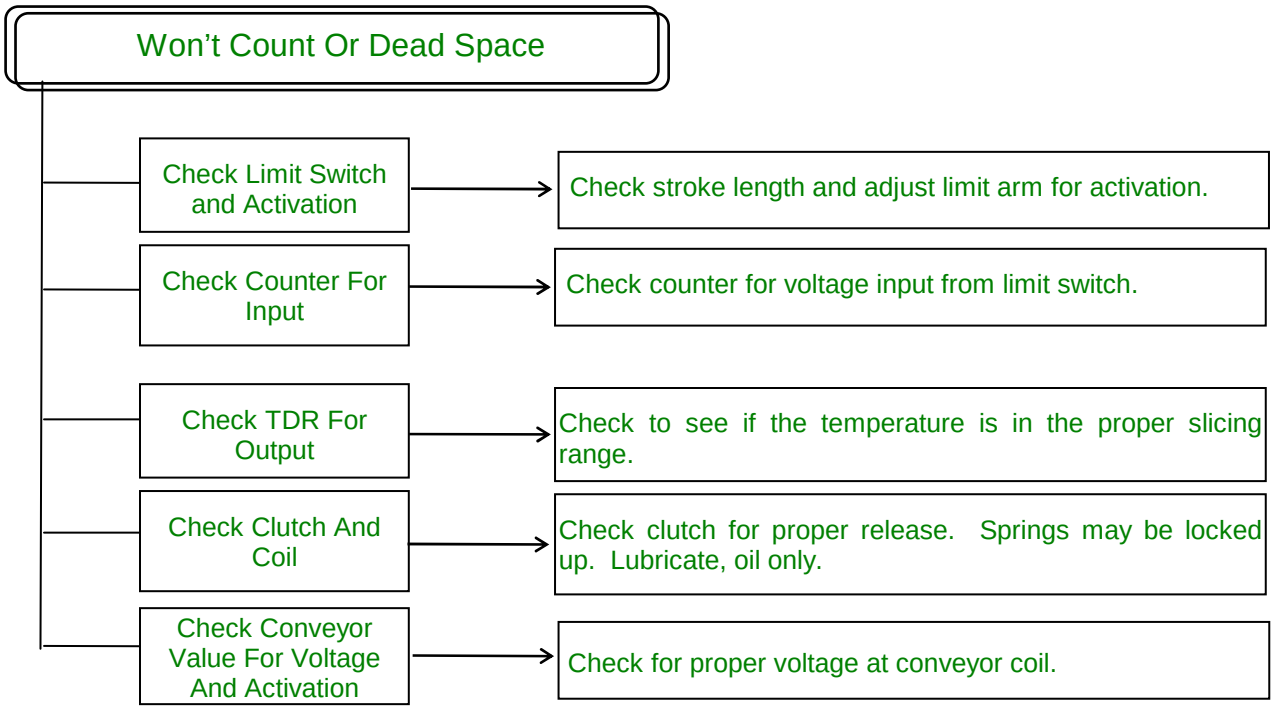


Chart 16: Won't Count Or Dead Space



SANITATION

This section outlines steps for cleaning the slicer. The cleaning procedure described here is recommended as a guideline for cleaning our equipment and will be helpful in developing an equipment SOP. *However, this procedure may not meet all the requirements for this equipment SOP and is intended to only be used as a guideline for customers developing their own procedures.*

CAUTION:	A few of the parts used on Grote machines are made from hard-coated anodized aluminum. Highly alkaline cleaning solutions may damage the anodized protective coating on these parts and promote rapid corrosion. Therefore, compounds with a high pH are *not recommended* for cleaning and sanitizing this machine.

Recommended Cleaning Compound.

Grote food processing machines include parts made from hard-coated anodized aluminum. The use of high pH cleaning compounds to sanitize the machines may cause degradation of these parts.

An acceptable cleaner named *Rapid Kleen* is available from DuBois Company in Cincinnati, Ohio. It is a self-foaming, alkaline cleaner designed for use in food industries and suitable for equipment containing aluminum parts. It is a "solvent" type cleaner with a pH of 10.4 in a 1% solution. The cleaner should be rinsed off with water according to the supplier's recommendations. Prolonged soaking of aluminum parts should be avoided. Cleaners with a pH of greater than 10.4 should not be used.

Rapid Kleen, or its equivalent, is recommended for use on all equipment manufactured by the Grote Company. A final sanitizing rinse with a quaternary ammonium chloride cleaner such as *Control* from DuBois Company is also recommended. Both *Rapid Kleen* and *Control* are available from DuBois Chemicals, Inc., DuBois Tower, Cincinnati, Ohio 45202, Phone (513) 762-6000.

Guidelines for Cleaning

If your machine is equipped with special guarding, release the safety guards to gain access to the interior of the machine.

1. Turn the machine off. A padlock-securable lockout/tagout switch is supplied for input disconnect.
2. Remove any product exposed above the product holders.
3. Open the drive side and idle side blade guards. Pull the product holder drive pull pin and place the product holder in the extended position locking it in place with lock pin.
4. Remove all remaining product from the product holders.
5. Rotate the blade scraper away from the blade and release the top of the water applicator pad *if provided*. If excess product blocks removal of the blade clear this product away before removing the blade. *This "dry" cleaning should be done using extra caution since the band blade is still on the machine*.
6. Rotate the blade tension handle counterclockwise and press in until the bearing block bottoms out in the housing. Carefully remove the blade and safely dispose of it.

CAUTION! Band blades are very sharp--use care when handling and wear recommended cut-resistant safety gloves.

7. Remove the product holders, pusher assembly, shuttle conveyor if provided, front tray and blade guide if removable type. These items can be rinsed and soaked separately in a tub of cleaning solution or cleaned along with the rest of the machine.

NOTE: The Grote Company has provided a blade scraper tool to clean the slot in the blade guide (See Page 5). This tool should be used with cleaner and sanitizer to insure that the blade slot is thoroughly clean.

8. Place a waterproof cover over the control panel and exposed motors to prevent water intrusion.
9. Pre-soak the machine if this step is part of your cleaning operation. The pre-soak may include chemicals but is normally a hot potable water rinse used to loosen dried excess product clinging to the machine.
10. Spray the entire machine with hot potable water rinse starting at the top and working down. Particular attention should be paid to the product zone to make sure all excess product is removed.
11. After removing as much excess product as possible, spray machine with cleaner. The type of cleaner used will dictate the amount of time it should remain on the machine. Use supplier's recommendations for cleaning strength, cleaning time, and protective equipment. Cleaner should also be used on the product holders, shuttle conveyor, pusher assembly, front tray and blade guide if they are not already being soaked in a cleaning solution.
12. Rinse the entire machine with potable water from the top down removing all cleaner.
13. Visually inspect the machine for any areas that need re-cleaned and spot scrub and rinse as necessary.
14. When the machine is visually clean apply a sanitizer. Sanitizer can be run through the blade guide potable water system. If the concentration of the sanitizer is high another potable water rinse may be required. Consult the supplier's recommendations. Hydrogen peroxide can also be used during this sanitation phase of cleaning.
15. Re-install the items removed from the machine after sanitizer has been applied to them. Spray sanitizer on areas touched during the installation.
16. Additional cleaners such as a foaming acid may be periodically required. Use all cleaners in accordance with the supplier's recommendations.
17. Recheck the blade guide slot to be sure it is clean. Check the condition and wear of the blade guide with the blade guide utility tools provided with the slicer.
18. Install the band blade if production will resume immediately after cleaning. Otherwise wait until just before the next production run to install the blade. In either case it is recommended that sanitizer be used to clean a new blade before it is installed.

CAUTION! Band blades are very sharp--use care when handling and wear recommended cut-resistant safety gloves.

19. Grease exposed bearings after each washdown. See the lubrication information in the maintenance section for a list of bearings that should be greased.

20. Swab testing should be done in accordance with your company's SOP's. Areas of particular importance on the slicer/applicator are in the product slicing zone consisting of the band blade, blade guide, thickness tray, front tray, product holders, shuttle conveyor and pusher assembly.

OPERATOR INTERFACE INFORMATION

Grote service personnel usually install new machines and provide instruction and training of the customer's operating personnel. For this reason not all manuals contain Operator Interface information.

However, for some machines information about the Operator Interface is contained in the following pages. Descriptions of the Operator Interface apply uniquely to the machine identified by the Serial Number on the front cover of this manual.

Screens are pictured and a description of the buttons appearing on the screens is provided. Other information about how to setup and operate the slicer is sometimes included.

Operator Interface Information Is Not Included For This Machine. Rely upon the training given when machine is installed. Contact the Grote Company Service Department if additional information is required.

SPARE PARTS LIST

The following pages contain a listing of parts that are used on the machine identified by the Serial Number on the front cover of this manual.

The items listed are those that may need replacing during the life of this machine. Grote Company recommends that these parts be purchased in advance and kept available for maintenance and repair.

Items whose description is indented on the spare parts list are repair parts associated with the immediately preceding primary item. For some of these items, customers may wish to stock only the repair item listed in the indented description.

PARTS AND SERVICE

J. E. GROTE COMPANY

CORPORATE HEADQUARTERS • 1160 Gahanna Parkway, Blacklick, Ohio 43004 • Tel: 614-868-8414 • Fax 614-863-1647
Parts and Service (Toll Free within USA) • Tel: 1-888-53-GROTE (534-7683) • Fax: 1-888-39-GROTE (394-7683)
E-mail: service@grote.company.com sales@grotecompany.com

EUROPEAN SALES/SERVICE • Wrexham Technology Park, Wrexham, North Wales LL137YP, United Kingdom
Tel: Int +44 (0) 1978-362243 • Fax: Int +44 (0) 1978-362255
E-Mail: service@intl.grotecompany.com sales@intl.grotecompany.com

Slicer/Applicator

SPARE PARTS LIST

PENDULUM SLICER, MOD# 522

SERIAL # 1065029

PART NUMBER	DESCRIPTION
1000046	BEARING, BALL, SGL ROW, 20 MM ID
1000047	BEARING, BALL, DBL ROW, 20 MM ID
1000083	VALVE, HYD FLOW CONTROL, ADJ
1000088	PUMP, HYD, 6 GPM, PISTON
1015258	SEAL KIT, COMPLETE, PVB5/6 PUMPS
1000144	ROLLER CHAIN, #40, RUSTLESS
1000154	FILTER, RETURN LINE, COMPLETE
1000090	FILTER, RETURN LINE, CARTRIDGE ONLY
1000190	ROD END, MALE, .375" ID BEARING
1000489	GAUGE, PRES, 0-2000 PSI, REAR MOUNT
1000503	FUSE, 3 A, FNM, 13/32 X 1-1/2
1000556	PLUNGER, SPRING SS, 5/8-11 X 1 1/16
1000586	ROLLER CHAIN, #40 CONNECTING LINK
1000625	VALVE, HYD SHUT OFF, PLUG, BRASS
1000661	BUSHING, SPLIT TAPER, H, 5/8" BORE
1000778	SPRING, COMP, SS
1000867	VALVE, WATER,1/4 NPT MALE & 3/8TUBE
1000891	BEARING, NEEDLE
1001007	IDLE SIDE BRG SIDE SLIDE PADS
1001027	IDLE SIDE BRG TOP&BOTTOM SLIDE PADS
1001567	WASHER, DELRIN, 1.50, 1.01, .125
1001610	BUSHING, SPLIT TAPER, 5/8" PLATED
1001928	SPROCKET, SS, #40, 18T, 1" BORE
1001989	WASHER, DELRIN, 1.25, .626, .150
1003877	BLADE PULLEY, 12.375 CROWN DIA.
1006473	SPRING, COMP, DIE (RED) ##
1127940	SPRING, COMP, DIE (RED) MHP, VINYL
1006860	BEARING, OUTER RING & ROLLER ASSY
1006861	BEARING, INNER RING,1.38" ID
1006881	BEARING, OUTER RING & ROLLER ASSY
1006882	BEARING, INNER RING, .63" ID
1007058	BRG UNIT, ASSEMBLY,(1-3/16)
1007401	PULL PIN, CLUSTER, 13.26 LG
1007613	DRIVE GEAR, CONV
1007623	BUSHING, SLIDE, SHUTTLE DELRIN
1008113	TERMINAL BLOCK
1009151	BLADE GUIDE, 22' CB *OBS
1028659	SCRAPER, BLADE GUIDE SLOT
1028660	WIDTH GAUGE, BLADE GUIDE SLOT
1028661	DEPTH GAUGE, BLADE GUIDE SLOT
1009453	BEARING, INNER RING, .375" ID
1009495	ROLLER, PUSHER BAR
1009594	BLADE SCRAPER, DELRIN, 3.50 LG
1009927	SPRING, COMP, SS
1011336	BLADE WIPER, TOP
1012236	WASHER, DELRIN, 1.25, .890, .250
1013492	BUSHING, DRIVE SHAFT
1024024	FUSE, 4 A, FNM, 13/32 X 1 1/2
1025156	ROLLER CLUTCH, BRG, 5/8 ID, 7/8 OD
1012989	INNER RACE
1025381	CONV BELT, WIRE, 24" FLAT FLEX
1028170	MOTOR, HYD, PLATED, 4.5 CU IN

PART NUMBER	DESCRIPTION
1000079	SEAL KIT, COMPLETE, S SERIES
1028659	SCRAPER, BLADE GUIDE SLOT
1028660	WIDTH GAUGE, BLADE GUIDE SLOT
1028661	DEPTH GAUGE, BLADE GUIDE SLOT
1030277	FUSE, 1 A, FNM, 13/32 X 1 1/2
1036167	RELAY SOCKET, 11 PIN DIN RAIL
1036745	BELT, A, 41.3 PITCH
1038937	KNOB, SS, .88
1043527	HINGE, LIFT-OFF, OFFSET, NYLON, RH
1044187	SWITCH, DISCONNECT, 40A
1044188	HINGE, LIFT-OFF, OFFSET, NYLON, LH
1044753	LATCH, STN STL, SLAM
1046910	CONV BELT, WIRE, 22" FLAT FLEX
1048840	POWER SUPPLY, 24 VDC, 6.3A
1054047	SENSOR, PROX, NPN, 12MM, 4MM, NO,SH
1057863	SWITCH, PUSH-PULL/TW, 3 NC, A-B
1058451	CLUTCH BRAKE, CB-8, 1 STOP,CW,24VDC
1089409	COIL, CLUTCH, CB-10, 24 VDC
1059746	RELAY, GP, 3PDT, 24 VDC, A-B
1059898	SWITCH, SAFETY, MAGNETC,FRS-9,24VDC
1064606	LEGEND PLATE, 30 MM, YLW, E-STOP
1065406	FUSE BLOCK, 13/32 X 1-1/2, 30A, DIN
1065818	FUSE, 15 A, LP-CC, 13/32 X 1-1/2
1066404	FUSE, 6 A, LP-CC, 13/32 X 1-1/2
1066639	FUSE, 10 A, LP-CC, 13/32 X 1-1/2
1067091	LEGEND, "MACHINE ENABLE"
1067216	##DIODE, 1N4004
1128714	DIODE ASSY, PLUGABLE TERMINAL BLOCK
1067400	SWITCH, PB, MOMEN, EXT.HD,ILLUM,GRN
1068958	I/O MODULE, 24 VDC IN, 24 VDC OUT
1070168	FUSE, 0.12 A, KTK-R, 13/32 X 1-1/2
1071800	SOFTWARE, PLC, 522 STD
1071801	SOFTWARE, OI, 522 STD
1124630	DIODE PLUG, PHOENIX

DRAWINGS

Assembly drawings containing an item parts list are provided for some of the major assemblies. The part numbers of these items may be used when ordering replacement parts.

The Electrical Schematic specifies the electrical wiring used on this machine. A 22 x 34 inch copy of the schematic is also included in the control box of most machines when they are shipped from the factory.

1089883

WE HAVE RECENTLY ADDED HOLES TO OUR DRIVE SIDE AND IDLE SIDE BLADE PULLEYS.
THESE HOLES HAVE BEEN ADDED TO MAKE IT EASIER TO CLEAN THE EQUIPMENT.

PLEASE NOTIFY ALL INDIVIDUALS WORKING WITH THIS EQUIPMENT.

CAUTION! DO NOT USE THE CLEANING HOLES TO ROTATE THE PULLEY.

KEEP FINGERS OUT OF THESE HOLES WHEN THE PULLEY IS MOVING.

SYM	REVISION RECORD	DRWN BY	REQ'D BY	DATE

MATERIAL

DRAWN BY	DESIGNED BY	CHECKED BY	SPECIFICATIONS
JDZ	RKH		
DATE	SCALE	NEXT ASSEMBLY	
11–11–98	1" = 1"		

TOLERANCES
(EXCEPT AS NOTED)

.000	± .005
.00	± .01
FRAC	± .03
ANGLE	± 0° – 30

125

TITLE

SERVICE BULLETIN NO: 0200010

WEIGHT

LBS

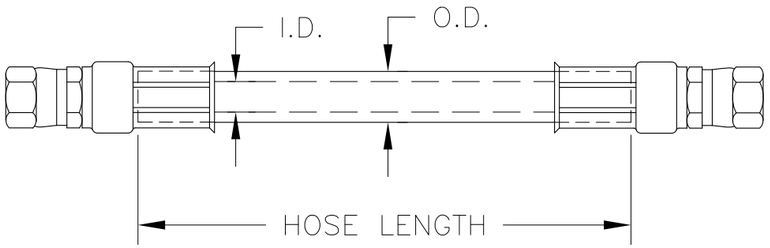
J.E.GROTE COMPANY, INC.

REFERENCE

DRAWING NUMBER

1089883

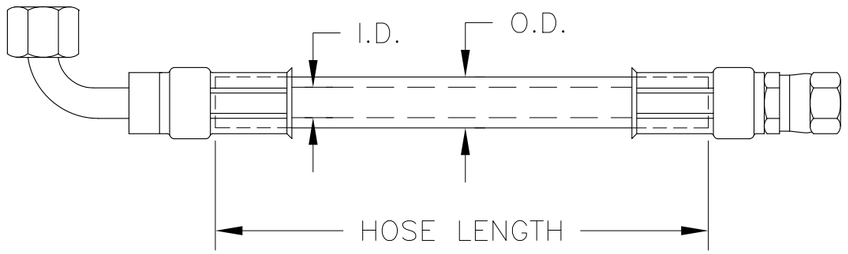
1126121



TYPE–A
IN–LINE/IN–LINE

DRAWING REFERENCE ONLY.
THESE ARE NOT PART NUMBERS!

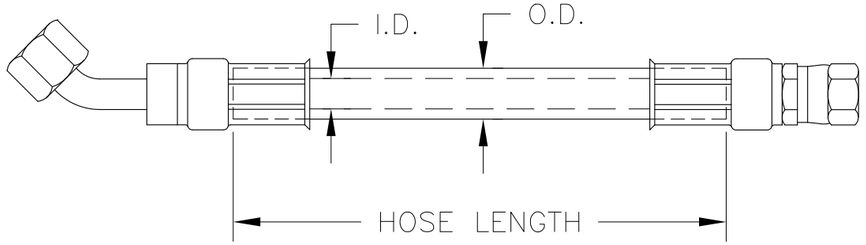
C1016077. FOR 1/4" NOM ID
C1016160. FOR 3/8" NOM ID
C1016155. FOR 1/2" NOM ID
C1016980. FOR 3/4" NOM ID



TYPE–B
90°/IN–LINE

DRAWING REFERENCE ONLY.
THESE ARE NOT PART NUMBERS!

C1016154. FOR 1/4" NOM ID
C1016147. FOR 3/8" NOM ID
C1030382. FOR 1/2" NOM ID
C1016149. FOR 3/4" NOM ID



TYPE–C
45°/IN–LINE

DRAWING REFERENCE ONLY.
THESE ARE NOT PART NUMBERS!

C1016978. FOR 1/4" NOM ID
C1016138. FOR 3/8" NOM ID
C1026638. FOR 1/2" NOM ID
C1016979. FOR 3/4" NOM ID

NOMINAL OD	NOMINAL ID
1/2"	1/4"
11/16"	3/8"
13/16"	1/2"
1 1/8"	3/4"

I.D. IS APPROXIMATE NOMINAL INTERNAL DIAMETER.
O.D. IS APPROXIMATE NOMINAL OUTSIDE DIAMETER.
USE THE CHART TO DETERMINE THE NOMINAL I.D. OF THE HOSE REQUIRED.
TO ORDER: SPECIFY HOSE I.D., TYPE AND HOSE LENGTH IN INCHES.
EXAMPLE: ORDERING A 1/2"–A–20" SPECIFIES A 1/2" NOM I.D.
IN–LINE/IN–LINE HOSE THAT IS 20" IN LENGTH.

TITLE

HOSE ORDERING GUIDE

SYM	REVISION RECORD	DRWN BY	REQ'D BY	DATE

MATERIAL

TOLERANCES
(EXCEPT AS NOTED)

.000	± .005
.00	± .01
FRAC	± .03
ANGLE	± 0° – 30′

125

DRAWN BY	DESIGNED BY	CHECKED BY	SPECIFICATIONS
DLC	JBG		
DATE	SCALE	NEXT ASSEMBLY	
2–21–03	3/8" = 1"		

WEIGHT

LBS

J.E.GROTE COMPANY, INC.

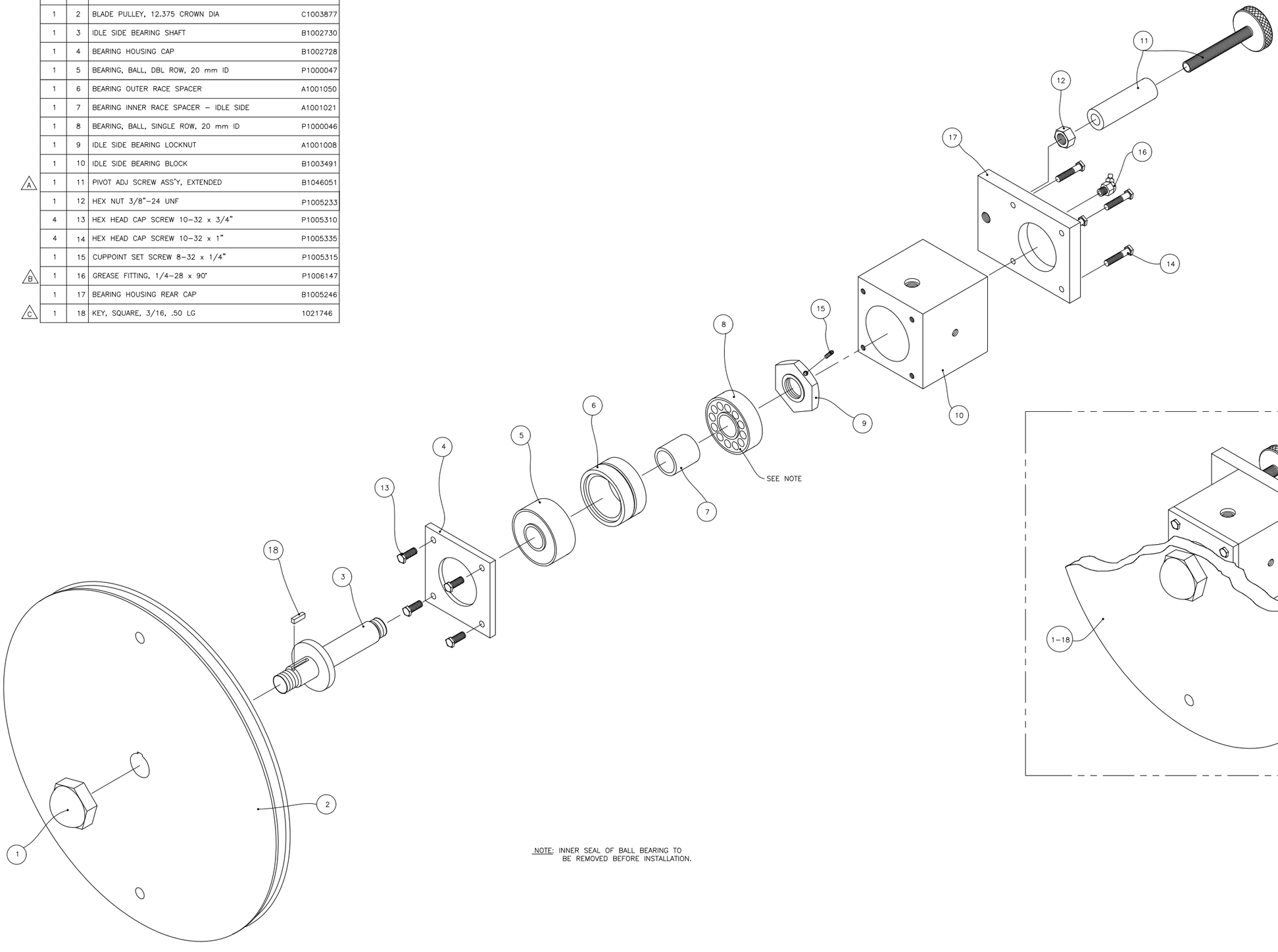
REFERENCE

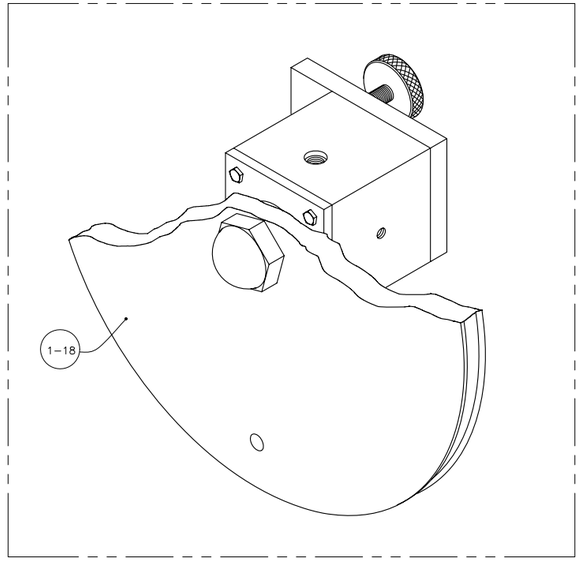
DRAWING NUMBER

1126121

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	ITEM 11 WAS 1046045	EPL		6/18/93
B	ITEM 16 WAS 1000140	CRM	SAN	5/21/96
C	ADDED ITEM 18.	DLC	MAB	7-26-10

NO REQ'D	ITEM NO	DESCRIPTION	
1	1	BLADE PULLEY LOCKNUT, ACORN STYLE	B1024638
1	2	BLADE PULLEY, 12.375 CROWN DIA	C1003877
1	3	IDLE SIDE BEARING SHAFT	B1002730
1	4	BEARING HOUSING CAP	B1002728
1	5	BEARING, BALL, DBL ROW, 20 mm ID	P1000047
1	6	BEARING OUTER RACE SPACER	A1001050
1	7	BEARING INNER RACE SPACER – IDLE SIDE	A1001021
1	8	BEARING, BALL, SINGLE ROW, 20 mm ID	P1000046
1	9	IDLE SIDE BEARING LOCKNUT	A1001008
1	10	IDLE SIDE BEARING BLOCK	B1003491
1	11	PIVOT ADJ SCREW ASS'Y, EXTENDED	B1046051
1	12	HEX NUT 3/8"–24 UNF	P1005233
4	13	HEX HEAD CAP SCREW 10–32 x 3/4"	P1005310
4	14	HEX HEAD CAP SCREW 10–32 x 1"	P1005335
1	15	CUPPOINT SET SCREW 8–32 x 1/4"	P1005315
1	16	GREASE FITTING, 1/4–28 x 90°	P1006147
1	17	BEARING HOUSING REAR CAP	B1005246
1	18	KEY, SQUARE, 3/16, .50 LG	1021746

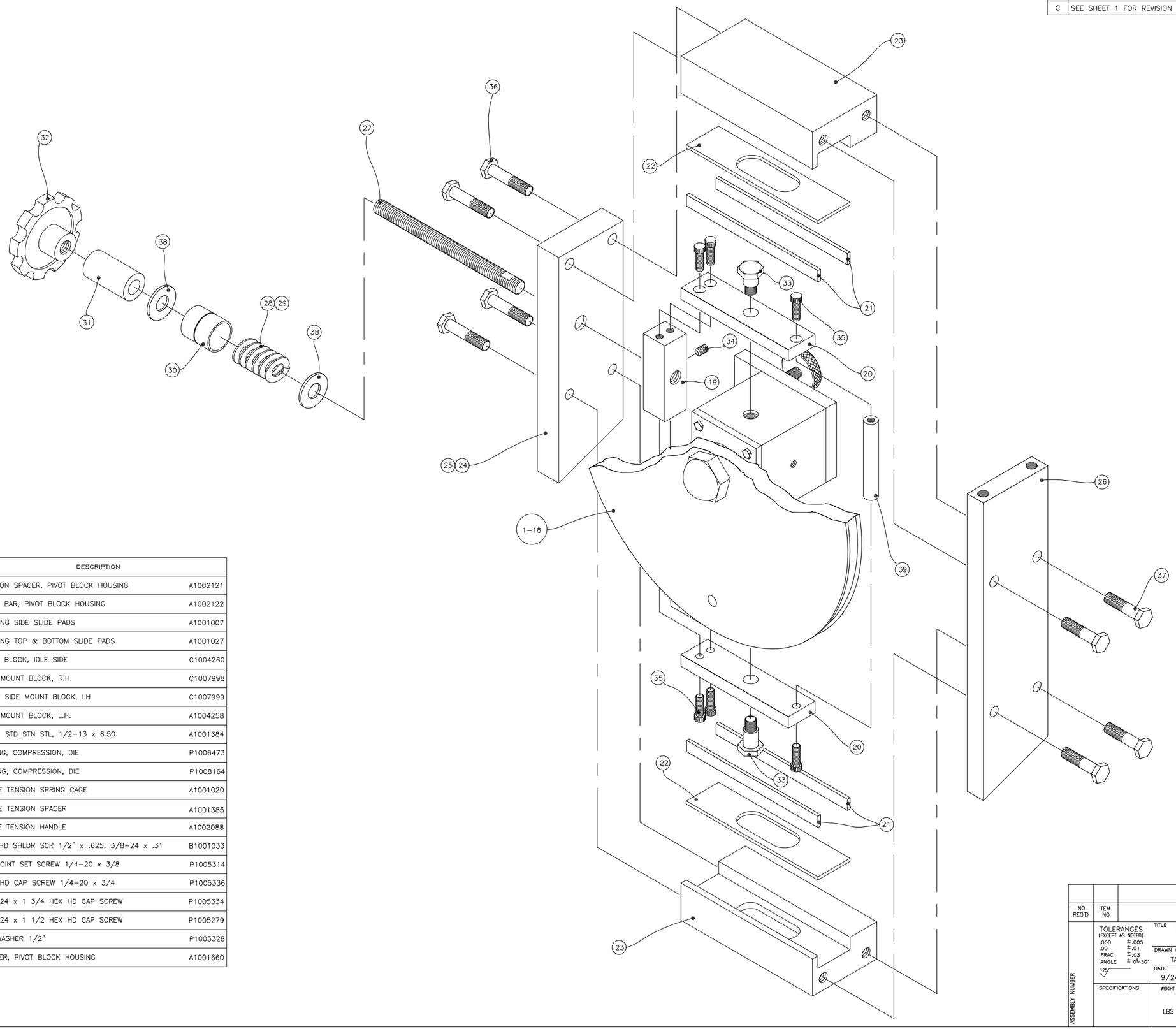




NOTE: INNER SEAL OF BALL BEARING TO BE REMOVED BEFORE INSTALLATION.

NO REQ'D	ITEM NO	DESCRIPTION		
ASSEMBLY NUMBER 1046047	TOLERANCES (EXCEPT AS NOTED) .000 ±.005 .00 ±.01 FRAC ±.03 ANGLE ± 0°-30' 125	TITLE: BEARING BLOCK ASSY, IDLE SIDE FOR SAFETY GUARDS		
		DRAWN BY: TAS	DESIGNED BY:	CHECKED BY:
		DATE: 9/24/91	SCALE: 1/2" = 1"	NEXT ASSY:
	SPECIFICATIONS	WEIGHT: LBS	J.E.GROTE COMPANY, INC.	REFERENCE: 1043089
				DRAWING NUMBER: 1046047 PAGE 1 OF 2

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
C	SEE SHEET 1 FOR REVISION HISTORY			



ASSEMBLY NUMBER 1046050 –530 LH	ASSEMBLY NUMBER 1046049 –530 RH	ASSEMBLY NUMBER 1046048 –522/517 LH	ASSEMBLY NUMBER 1046047 –522/517 RH	ITEM NO	DESCRIPTION	
NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D			
1	1	1	1	19	TENSION SPACER, PIVOT BLOCK HOUSING	A1002121
2	2	2	2	20	SLIDE BAR, PIVOT BLOCK HOUSING	A1002122
4	4	4	4	21	BEARING SIDE SLIDE PADS	A1001007
2	2	2	2	22	BEARING TOP & BOTTOM SLIDE PADS	A1001027
2	2	2	2	23	SLIDE BLOCK, IDLE SIDE	C1004260
/	1	/	1	24	SIDE MOUNT BLOCK, R.H.	C1007998
1	/	1	/	25	RIGHT SIDE MOUNT BLOCK, LH	C1007999
1	1	1	1	26	SIDE MOUNT BLOCK, L.H.	A1004258
1	1	1	1	27	STUD, STD STN STL, 1/2–13 x 6.50	A1001384
/	/	1	1	28	SPRING, COMPRESSION, DIE	P1006473
1	1	/	/	29	SPRING, COMPRESSION, DIE	P1008164
1	1	1	1	30	BLADE TENSION SPRING CAGE	A1001020
1	1	1	1	31	BLADE TENSION SPACER	A1001385
1	1	1	1	32	BLADE TENSION HANDLE	A1002088
2	2	2	2	33	HEX HD SHLDR SCR 1/2" x .625, 3/8–24 x .31	B1001033
1	1	1	1	34	CUPPOINT SET SCREW 1/4–20 x 3/8	P1005314
6	6	6	6	35	SOC HD CAP SCREW 1/4–20 x 3/4	P1005336
4	4	4	4	36	3/8–24 x 1 3/4 HEX HD CAP SCREW	P1005334
4	12	4	4	37	3/8–24 x 1 1/2 HEX HD CAP SCREW	P1005279
2	2	2	2	38	FLATWASHER 1/2"	P1005328
1	1	1	1	39	SPACER, PIVOT BLOCK HOUSING	A1001660

NO REQ'D	ITEM NO	DESCRIPTION

ASSEMBLY NUMBER

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'
125

TITLE: BEARING BLOCK ASSY, IDLE SIDE FOR SAFETY GUARDS

DRAWN BY	DESIGNED BY	CHECKED BY
TAS		
DATE: 9/24/91	SCALE: 1/2" = 1"	NEXT ASSY

SPECIFICATIONS

WEIGHT: LBS

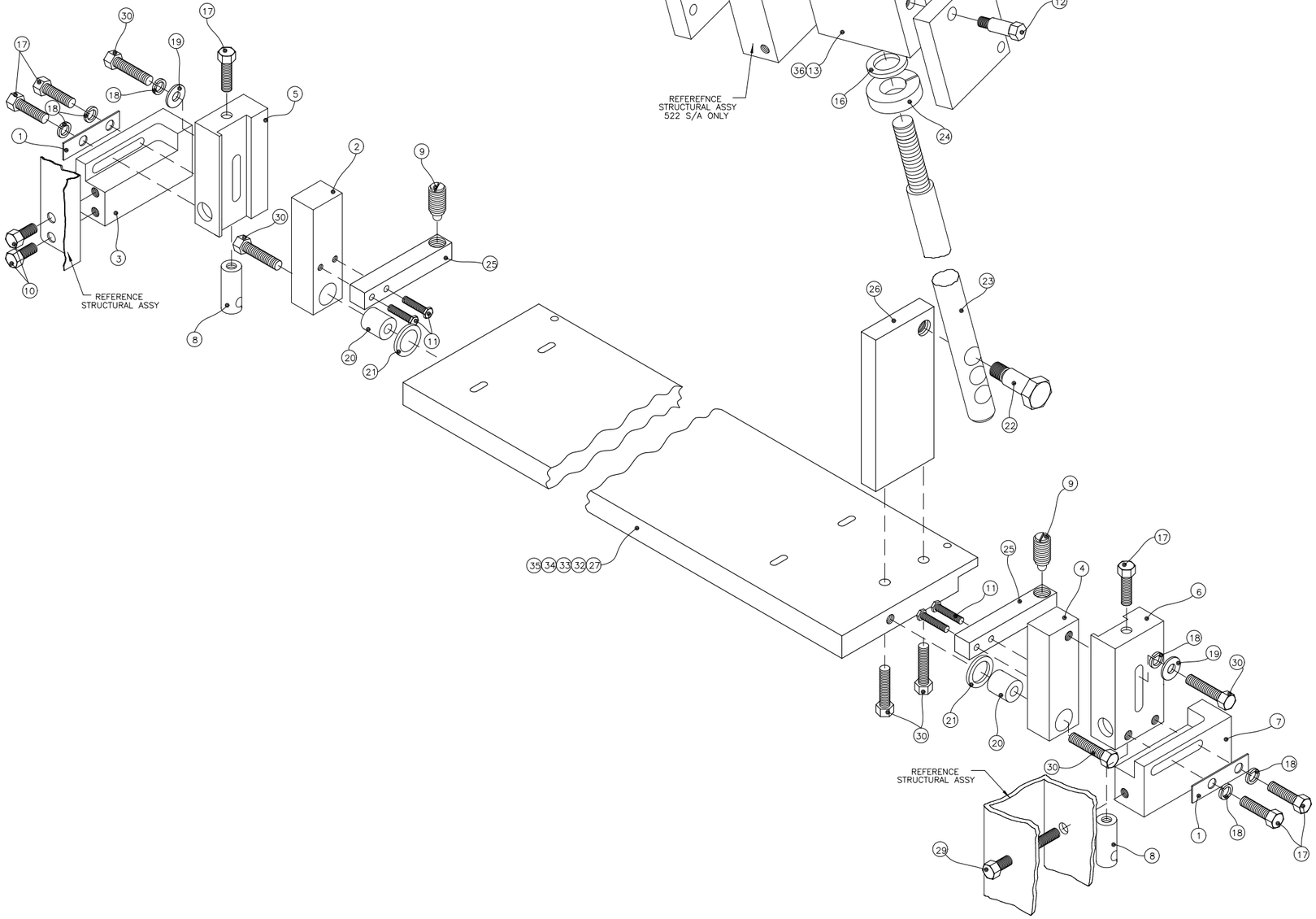
J.E.GROTE COMPANY, INC.

REFERENCE: 1043099

DRAWING NUMBER: 1046047
PAGE 2 OF 2

SYM	REVISION RECORD	BY	DATE

1043404



517 S/A	522 S/A	3522, HD 1	530 S/A	517 S/A	530 S/A	530 S/A	522 S/A	ITEM NO	DESCRIPTION	
1								36	PIVOT BLOCK, THICKNESS ADJ, SS	1037094
							1	35	THICKNESS TRAY, 17" S/A	1050145
				1				34	THICKNESS TRAY, 17" S/A	1022764
			1		1			33	THICKNESS TRAY, 30" S/A	1042299
						1		32	THICKNESS TRAY, 30" S/A	1042298
1			2	1	1	1		31	HEX HD SHOULDER SCREW 1/2 DIA x 1.025	1001032
6	6	6	6	6	6	6	6	30	HEX HD CAP SCREW 3/8"–24 x 1 3/4"	1005334
1	1	1	1	1	1	1	1	29	HEX HD CAP SCREW 3/8"–24 x 3 1/2"	1006039
	1	1	1				1	28	HEX HD SHOULDER SCREW 1/2 DIA x 2.622	1023161
	1	1					1	27	THICKNESS TRAY, 22" S/A	1022277
1	1	1	1	1	1	1	1	26	BAR, THICKNESS ADJ, RH	1019728
2	2	2	2	2	2	2	2	25	BALL PLUNGER, HOUSING	1001971
1	1	1	1	1	1	1	1	24	COLLAR, 1 PC CLAMPING, 1.00 ID	1010129
1	1	1	1	1	1	1	1	23	LINKAGE ROD, THICKNESS ADJ	1033779
1	1	1	1	1	1	1	1	22	SHOULDER SCREW, .623 x 1.312	1019773
2	2	2	2	2	2	2	2	21	WASHER, DELRIN THRUST, 1.25 OD	1012236
2	2	2	2	2	2	2	2	20	PIVOT SHAFT, THK TRAY	1012235
2	2	2	2	2	2	2	2	19	FLATWASHER, 3/8"	1005281
6	6	6	6	6	6	6	6	18	LOCKWASHER, 3/8"	1005229
6	6	6	6	6	6	6	6	17	HEX HD CAP SCREW 3/8"–24 x 1 1/4"	1005278
2	2	2	2	2	2	2	2	16	WASHER, DELRIN THRUST, 1.50 OD	1001567
1	1	1	1	1	1	1	1	15	SPACER, THICKNESS ADJ	1017950
1	1	1	1	1	1	1	1	14	HANDLE ADJ, THICKNESS TRAY	1033804
1		1		1	1	1	1	13	PIVOT BLOCK, THICKNESS ADJ	1033808
1	1	1		1	1	1	1	12	HEX HD SHOULDER SCREW 1/2 DIA x 1.025	1001032
4	4	4	4	4	4	4	4	11	HEX HD CAP SCREW 1/4"–28 x 1 1/4"	1005277
2	2	2	2	2	2	2	2	10	HEX HD CAP SCREW 3/8"–24 x 3/4"	1005337
2	2	2	2	2	2	2	2	9	PLUNGER, SPRING SS, 5/8–11 x 1 1/16	1000556
2	2	2	2	2	2	2	2	8	THK TRAY HEIGHT ADJ PIN	1023954
1	1	1	1	1	1	1	1	7	SUPPORT, PIVOT BLOCK, DRIVE SIDE	1036897
1	1	1	1	1	1	1	1	6	ADJ BLOCK, THICKNESS TRAY, LH	1036894
1	1	1	1	1	1	1	1	5	ADJ BLOCK, THICKNESS TRAY, RH	1036893
1	1	1	1	1	1	1	1	4	PIVOT BLOCK, THICKNESS TRAY, LH	1036896
1	1	1	1	1	1	1	1	3	SUPPORT, PIVOT BLOCK, IDLE SIDE	1037096
1	1	1	1	1	1	1	1	2	PIVOT BLOCK, THICKNESS TRAY, RH	1036895
2	2	2	2	2	2	2	2	1	SLOT COVER, THK TRAY	1005918
NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
ASSEMBLY NUMBER 1050267	ASSEMBLY NUMBER 1048379	ASSEMBLY NUMBER 1037437	ASSEMBLY NUMBER 1047098	ASSEMBLY NUMBER 1033955	ASSEMBLY NUMBER 1037005	ASSEMBLY NUMBER 1043429	ASSEMBLY NUMBER 1033809			

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'

SPECIFICATIONS

TITLE: THICKNESS TRAY ASSY, RH SL/AP W/ UPPER FINE ADJ

SCALE: 1" = 3/8" | DRAWN BY: TAS | REF:

DATE: 5/7/91 | CHK'D BY: | NEXT ASSY:

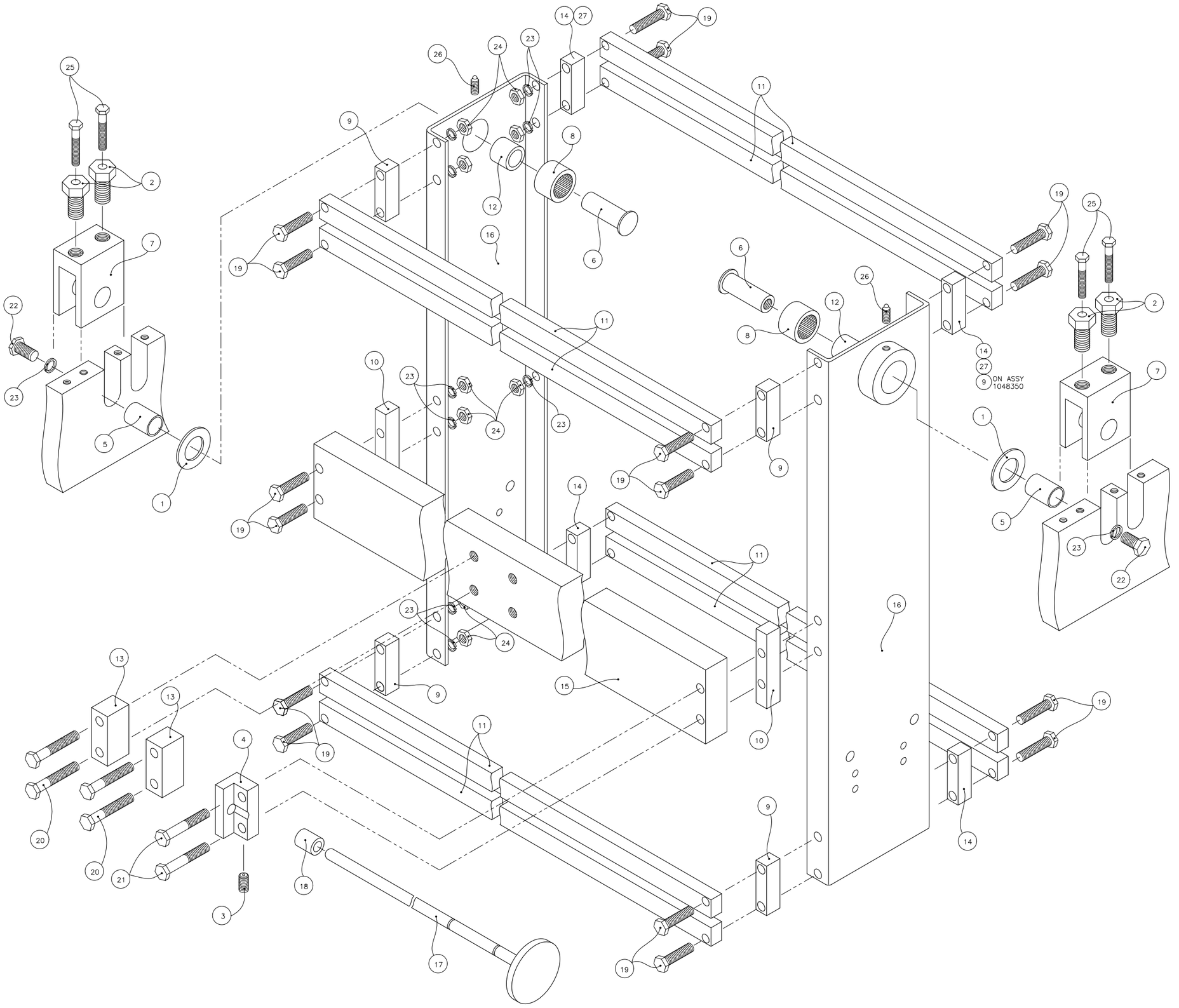
MACH:

DRAWING NUMBER: 1043404

GROTE
J.E.GROTE COMPANY, INC

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	ITEM 11 WAS1002330. ITEM 15 WAS 1007460.	DLC		4-22-02

1041560



	NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
	2		2	27	CROSS TIE SPACER, 1.38 LG	B1025490
	2	2	2	26	GREASE FITTING, 1/4-28 STRAIGHT LEG	P1010165
	4	4	4	25	HHCS, 1/4-28 x 1 1/2" LG	P1005566
	20	20	20	24	HEX NUT 5/16-24	P1005905
	20	20	20	23	LOCKWASHER 5/16"	P1005330
	2	2	2	22	HHCS, 3/8-24 x .75" LG	P1005337
	2	2	2	21	HHCS, 5/16-24 x 2.00" LG	P1005343
	4	4	4	20	HHCS, 5/16-24 x 1.50" LG	P1005342
	18	18	18	19	HHCS, 5/16-24 x 1.75" LG	P1005903
	1	1	1	18	SPACER, STD DRILLED, DELRIN, PULL PIN	A1007399
	1	1	1	17	PULL PIN ASSEMBLY	B1007401
	2	2	2	16	CLUSTER SIDE	C1006889
A	1	1	1	15	PIVOT BAR, CLUSTER	B1025489
	2	2	4	14	CROSS TIE SPACER, 1.03 LG	B1038878
	2	2	2	13	PIVOT BLOCK, CLUSTER LINKAGE	B1002761
	2	2	2	12	BEARING INNER RING, 5/8 ID	P1006882
A	8	8	8	11	CROSS TIE, CLUSTER, 22, SS	B1019949
	2	2	2	10	PIVOT BAR SPACER, STN STL	B1019373
	6	4	4	9	CROSS TIE SPACER, .62 LG	B1019372
	2	2	2	8	BEARING, ROLLER, 7/8 ID	P1006881
	2	2	2	7	PIVOT MOUNT, CLUSTER	B1006719
	2	2	2	6	CLUSTER PIVOT SHAFT	A1006884
	2	2	2	5	INNER RACE SPACER	A1006885
	1	1	1	4	PIN BLOCK, CLUSTER, OUTSIDE	A1005216
	1	1	1	3	PLUNGER, BALL SS, 5/16-18 x 37/64" LG	P1000782
	4	4	4	2	ADJUSTMENT CAP SCREW, CLUSTER	A1006718
	2	2	2	1	CLUSTER SPACER, ROLLER BEARINGS	A1007085

ASSEMBLY NUMBER 1048350
ASSEMBLY NUMBER 1062591
ASSEMBLY NUMBER 1041560

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'
125

SPECIFICATIONS

TITLE: CLUSTER ASSEBLY, 22" S/A, W/ 1.03" SPACERS

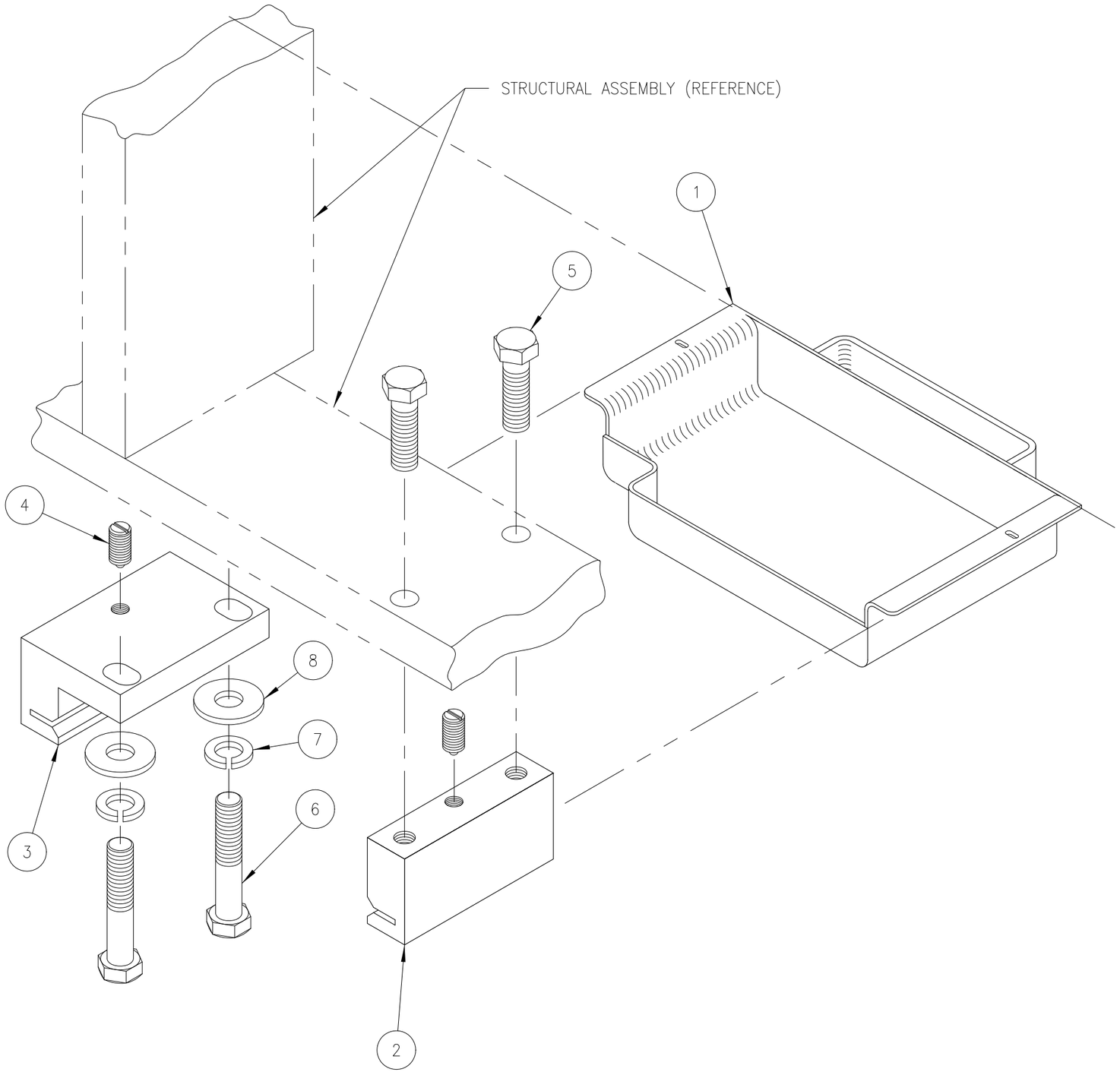
DRAWN BY	DESIGNED BY	CHECKED BY
TAS/BMC		
DATE 7/18/97	SCALE 1/2" = 1"	NEXT ASSY
WEIGHT LBS		REFERENCE

J.E.GROTE COMPANY, INC.

DRAWING NUMBER 1041560

SYM	REVISION RECORD	BY	DATE

1022158



NO REQD	ITEM NO	DESCRIPTION	
2	8	FLATWASHER, 3/8	1005281
2	7	LOCKWASHER, 3/8	1005229
2	6	HHCS, 3/8–24 UNF x 2.00 LG	1005280
2	5	HHCS, 3/8–24 UNF x 1 1/4 LG	1005278
2	4	PLUNGER, BALL, SS, 5/16–18 x 37/64	P1000782
1	3	GUIDE, L–SHAPE, SCRAPER PAN	B1018650.
1	2	GUIDE, BOLTED, SCRAPER PAN	B1018652
1	1	PAN, SCRAPER, WELD ASSEMBLY	C1022157

ASSEMBLY NUMBER 1022158

TOLERANCES (EXCEPT AS NOTED)

.000	± .005
.00	± .01
FRAC	± .03
ANGLE	± 0° – 30

SPECIFICATIONS

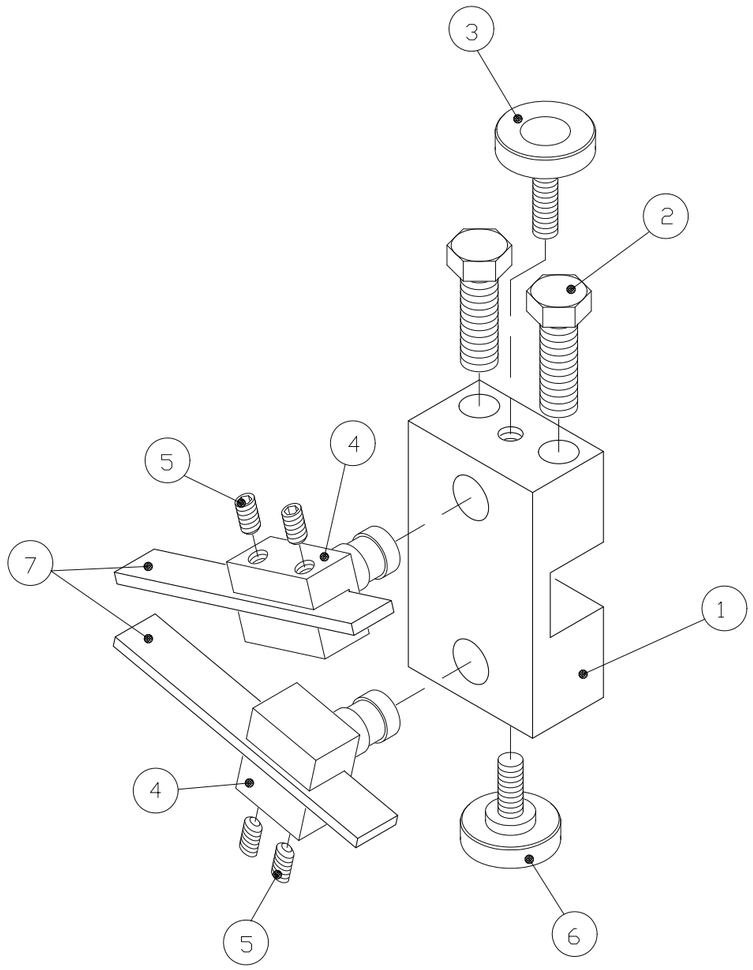
TITLE: SCRAPER PAN ASSEMBLY, 522 S/A

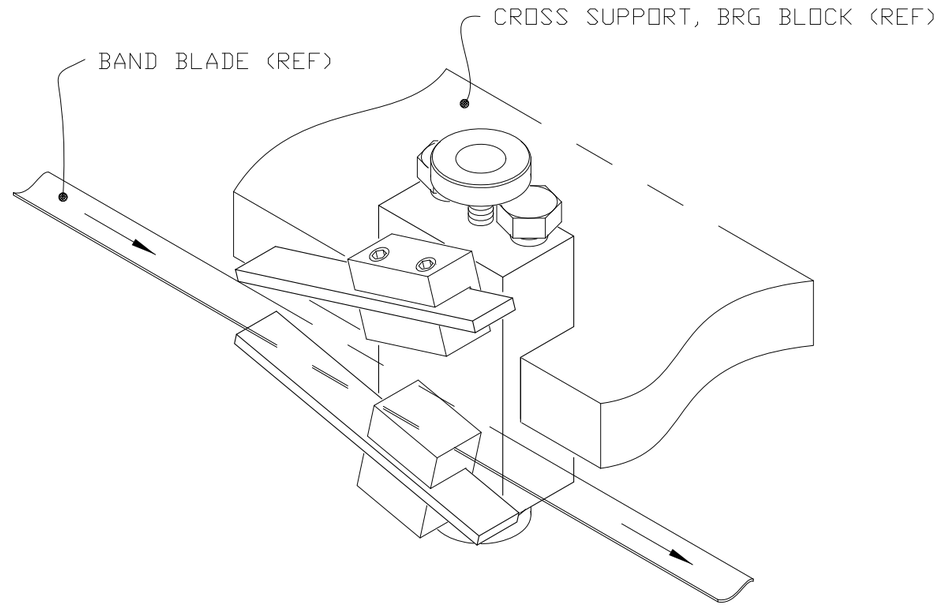
SCALE	DRAWN BY	REFERENCE
NONE	JDZ	
DATE: 06–03–94	CHECKED BY	NEXT ASSEMBLY
		MACHINE
		DRAWING NUMBER: 1022158

J.E.GROTE COMPANY, INC.

SYM	REVISION RECORD	BY	DATE

1009121





NO REQ'D	ITEM NO	DESCRIPTION	
2	7	BLADE SCRAPER	A1009594
1	6	SCREW, STD KNURLED, .75 LG	A1009599
4	5	CUPPOINT SET SCREW, 1/4-28 x 3/8"	P1007048
2	4	BLADE SCRAPER HOLDER, STN STL	A1037156
1	3	SCREW, STD KNURLED, 1.25 LG	A1009613
2	2	HHCS, 3/8-24 x 1-1/4"	P1005278
1	1	MTG BRACKET, BLADE SCRAPER	B1025536

ASSEMBLY NUMBER 1009121

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°30'

SPECIFICATIONS

TITLE: BLADE SCRAPER ASSY

SCALE: 1/2" = 1"

DRAWN BY: TAS

REF:

DATE: 9-2-92

CHK'D BY:

NEXT ASSY:

MACH:

DRAWING NUMBER: 1009121

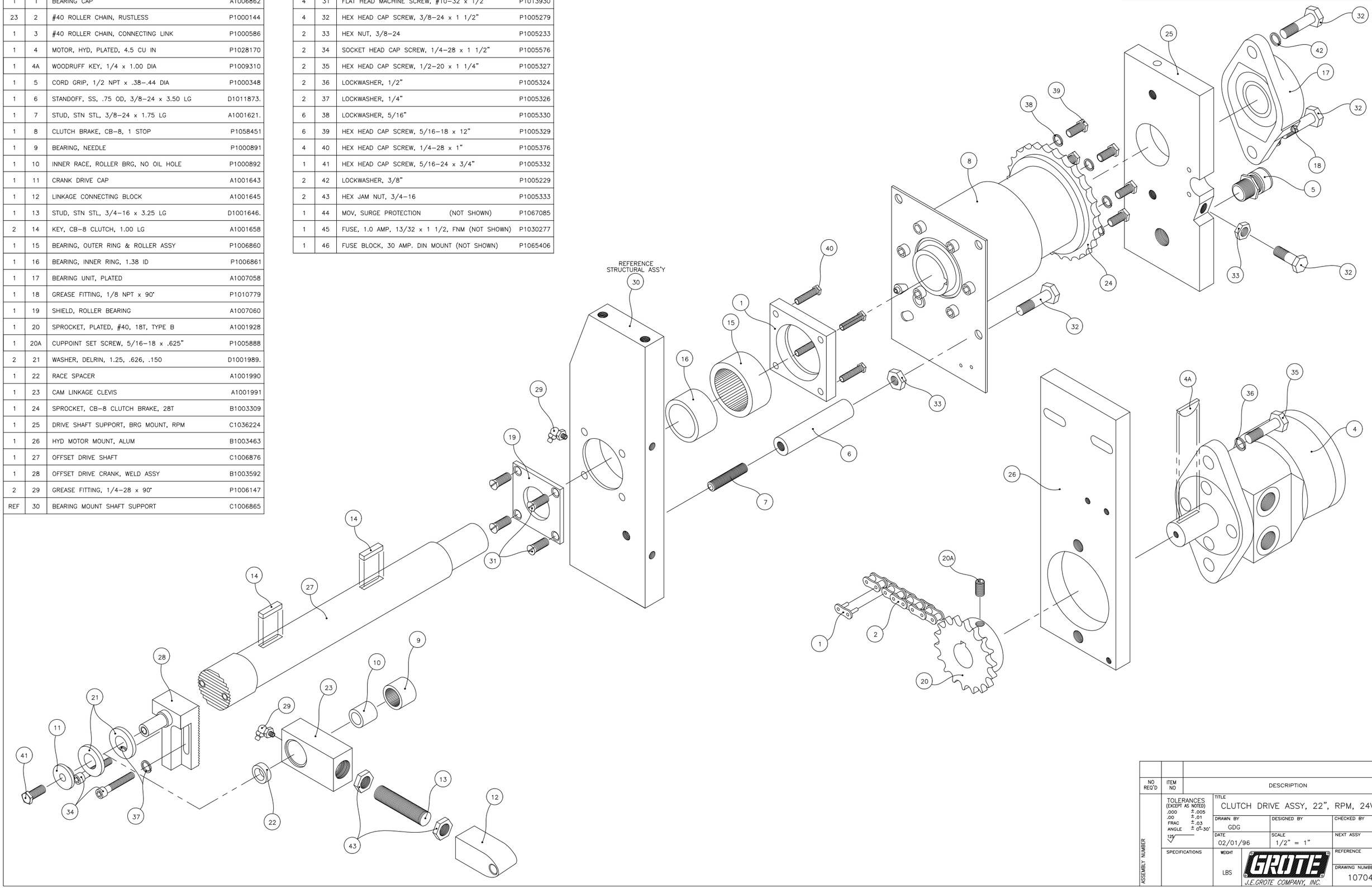
GROTE
J.E.GROTE COMPANY, INC

NO REQ'D	ITEM NO	DESCRIPTION	
1	1	BEARING CAP	A1006862
23	2	#40 ROLLER CHAIN, RUSTLESS	P1000144
1	3	#40 ROLLER CHAIN, CONNECTING LINK	P1000586
1	4	MOTOR, HYD, PLATED, 4.5 CU IN	P1028170
1	4A	WOODRUFF KEY, 1/4 x 1.00 DIA	P1009310
1	5	CORD GRIP, 1/2 NPT x .38-.44 DIA	P1000348
1	6	STANDOFF, SS, .75 OD, 3/8-24 x 3.50 LG	D1011873.
1	7	STUD, STN STL, 3/8-24 x 1.75 LG	A1001621.
1	8	CLUTCH BRAKE, CB-8, 1 STOP	P1058451
1	9	BEARING, NEEDLE	P1000891
1	10	INNER RACE, ROLLER BRG, NO OIL HOLE	P1000892
1	11	CRANK DRIVE CAP	A1001643
1	12	LINKAGE CONNECTING BLOCK	A1001645
1	13	STUD, STN STL, 3/4-16 x 3.25 LG	D1001646.
2	14	KEY, CB-8 CLUTCH, 1.00 LG	A1001658
1	15	BEARING, OUTER RING & ROLLER ASSY	P1006860
1	16	BEARING, INNER RING, 1.38 ID	P1006861
1	17	BEARING UNIT, PLATED	A1007058
1	18	GREASE FITTING, 1/8 NPT x 90°	P1010779
1	19	SHIELD, ROLLER BEARING	A1007060
1	20	SPROCKET, PLATED, #40, 18T, TYPE B	A1001928
1	20A	CUPPOINT SET SCREW, 5/16-18 x .625"	P1005888
2	21	WASHER, DELRIN, 1.25, .626, .150	D1001989.
1	22	RACE SPACER	A1001990
1	23	CAM LINKAGE CLEVIS	A1001991
1	24	SPROCKET, CB-8 CLUTCH BRAKE, 28T	B1003309
1	25	DRIVE SHAFT SUPPORT, BRG MOUNT, RPM	C1036224
1	26	HYD MOTOR MOUNT, ALUM	B1003463
1	27	OFFSET DRIVE SHAFT	C1006876
1	28	OFFSET DRIVE CRANK, WELD ASSY	B1003592
2	29	GREASE FITTING, 1/4-28 x 90°	P1006147
REF	30	BEARING MOUNT SHAFT SUPPORT	C1006865

NO REQ'D	ITEM NO	DESCRIPTION	
4	31	FLAT HEAD MACHINE SCREW, #10-32 x 1/2"	P1013930
4	32	HEX HEAD CAP SCREW, 3/8-24 x 1 1/2"	P1005279
2	33	HEX NUT, 3/8-24	P1005233
2	34	SOCKET HEAD CAP SCREW, 1/4-28 x 1 1/2"	P1005576
2	35	HEX HEAD CAP SCREW, 1/2-20 x 1 1/4"	P1005327
2	36	LOCKWASHER, 1/2"	P1005324
2	37	LOCKWASHER, 1/4"	P1005326
6	38	LOCKWASHER, 5/16"	P1005330
6	39	HEX HEAD CAP SCREW, 5/16-18 x 12"	P1005329
4	40	HEX HEAD CAP SCREW, 1/4-28 x 1"	P1005376
1	41	HEX HEAD CAP SCREW, 5/16-24 x 3/4"	P1005332
2	42	LOCKWASHER, 3/8"	P1005229
2	43	HEX JAM NUT, 3/4-16	P1005333
1	44	MOV, SURGE PROTECTION (NOT SHOWN)	P1067085
1	45	FUSE, 1.0 AMP, 13/32 x 1 1/2, FNM (NOT SHOWN)	P1030277
1	46	FUSE BLOCK, 30 AMP. DIN MOUNT (NOT SHOWN)	P1065406

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	ITEM NO. 30 WAS 1060119	JDZ	JDZ	10-16-96

1070449



NO REQ'D	ITEM NO	DESCRIPTION

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0° 30'
125

TITLE: CLUTCH DRIVE ASSY, 22", RPM, 24VDC

DRAWN BY	DESIGNED BY	CHECKED BY
GDG		
DATE: 02/01/96	SCALE: 1/2" = 1"	NEXT ASSY

SPECIFICATIONS | WEIGHT: LBS | REFERENCE

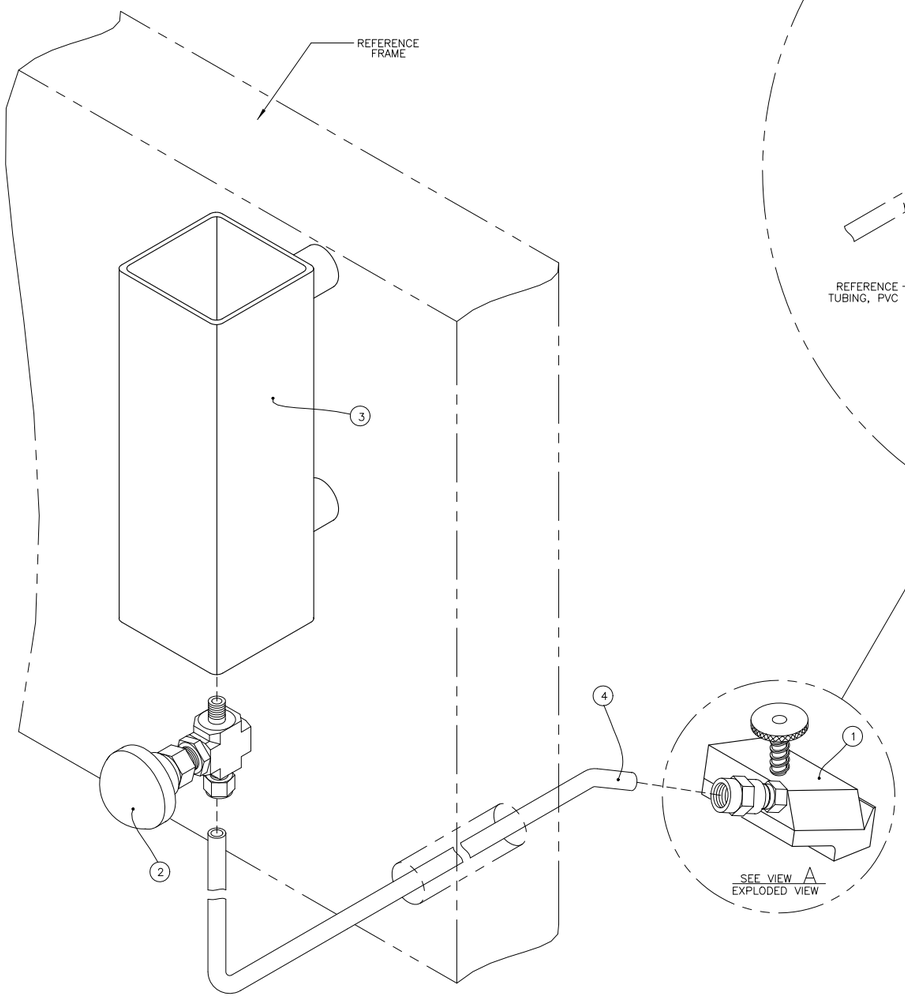
J.E.GROTE COMPANY, INC.

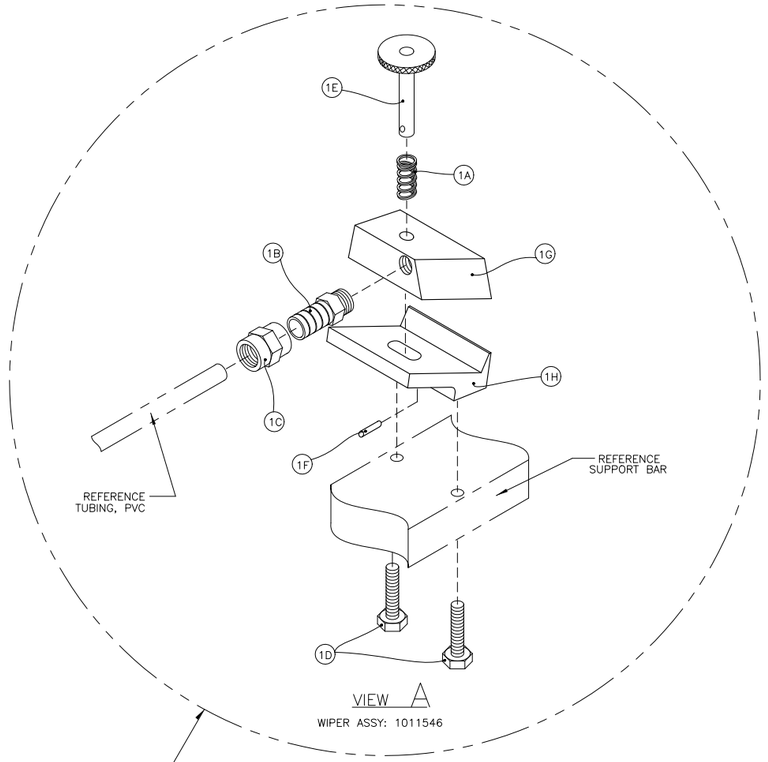
DRAWING NUMBER: 1070449

ASSEMBLY NUMBER

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	ITEM 4 WAS 1000802.	DLC	DWC	6-9-00

1050330





NO REQ'D	ITEM NO	DESCRIPTION	
1	1H	WIPER, BLADE, BASE	C1011337
1	1G	WIPER, BLADE, TOP	C1011336
1	1F	CHEESE WIPER LOCKING PIN	A1001590
1	1E	LOCKING HANDLE, WIPER	A1009475
2	1D	HEX HEAD CAP SCREW, 10-32 x 1 1/4"	P1006018
1	1C	HOSE CONNECTOR SLEEVE	P1008995
1	1B	HOSE CONNECTOR TO MALE PIPE	P1008994
1	1A	SPRING, COMPRESSION, SS	P1000778
A 22 in	4	TUBING, TYGON, 3/8 OD, 1/4 ID	1101255
1	3	WATER RESERVOIR	C1003358
1	2	WATER VALVE, 1/4 NPT MALE & 3/8 TUBE	P1000867
1	1	WIPER ASSY, DELRIN	C1011546

ASSEMBLY NUMBER 1050330

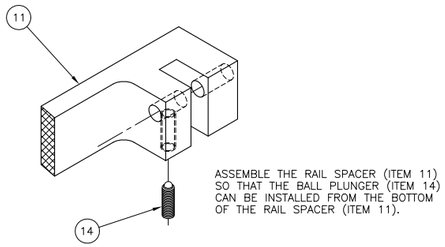
TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°-30'
125

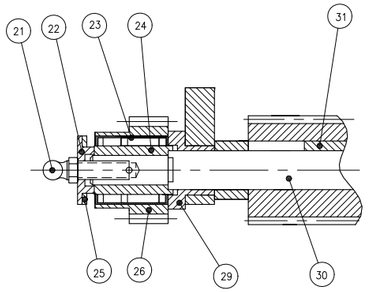
TITLE
WATER RESERVOIR ASSY, BLADE WIPER

DRAWN BY	DESIGNED BY	CHECKED BY
GDG		
DATE 10-4-95	SCALE 1/2" = 1"	NEXT ASSY
SPECIFICATIONS	WEIGHT LBS	REFERENCE
	J.E.GROTE COMPANY, INC.	DRAWING NUMBER 1050330

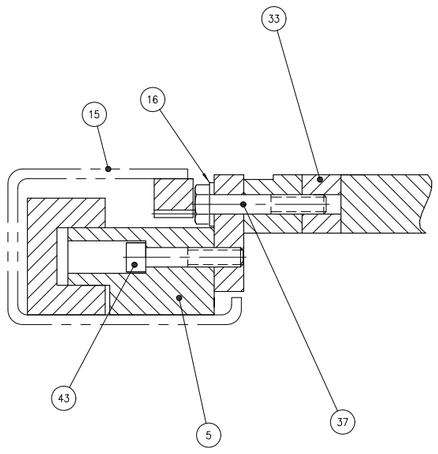
SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	PT NO A1012989 WAS A1012969	GDG		11/22/95
B	MADE ITEMS #6, 15, 34 & 35 REFERENCES	GDG		02/15/96
C	REMOVED ITEM 13. ITEM 12 WAS QTY OF ONE	JDZ	JDZ	08-15-96

1046291

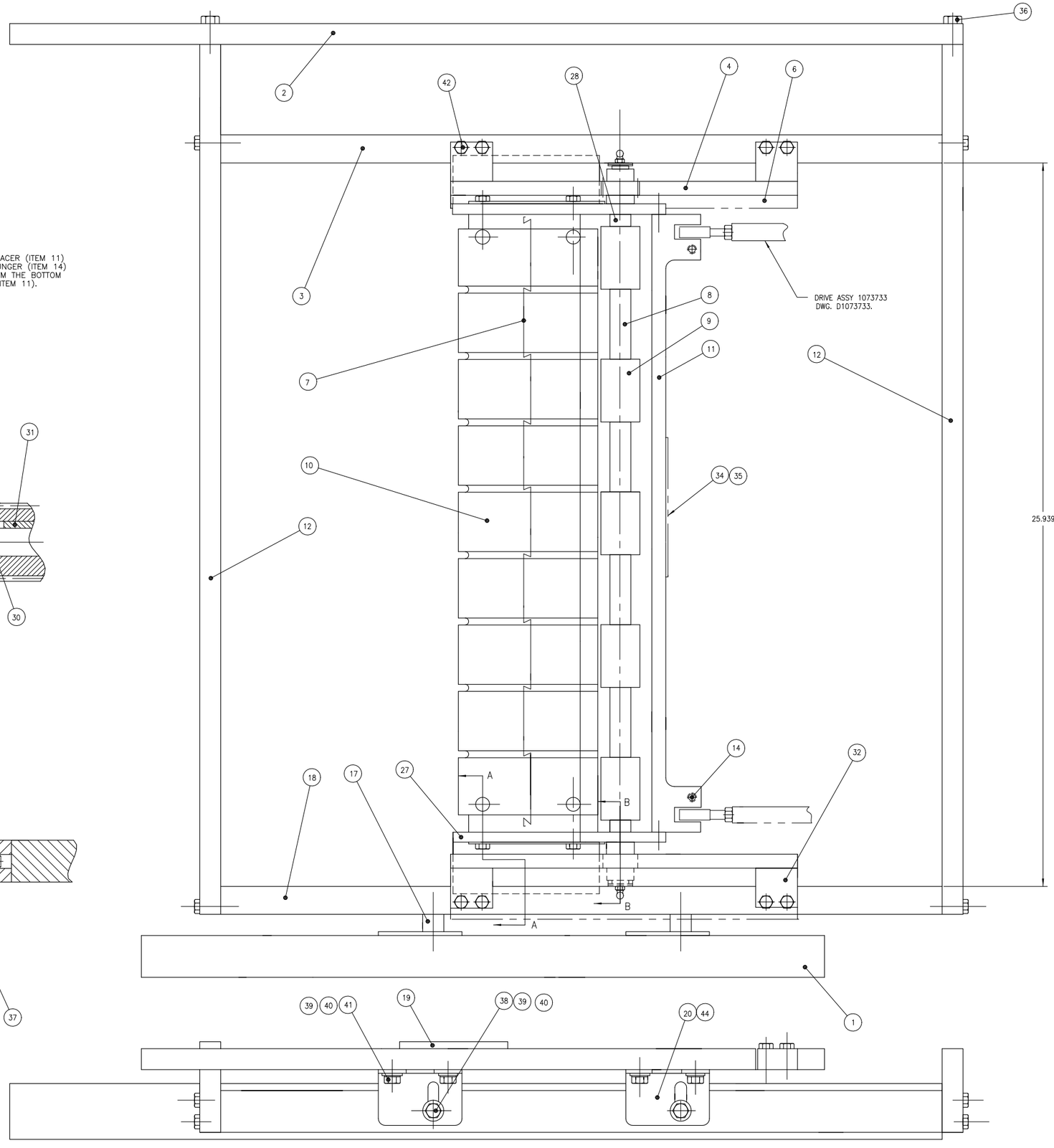




SECTION B- B
SCALE: 1"=1"



SECTION A - A
SCALE: 1"=1"



NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
2			44	HANGER, OUTSIDE, LH	B1018218
6	6	6	43	SOC HEAD CAP SCREW, 1/4-28 x 1 1/4	P1013788
8	8	8	42	HEX HEAD CAP SCREW, #10-32 x 3/4	P1005310
4	4	4	41	HEX HEAD CAP SCREW, 5/16-24 x 1	P1005562
6	6	6	40	LOCKWASHER, 5/16	P1005330
6	6	6	39	FLATWASHER, 5/16	P1005344
2	2	2	38	HEX HEAD CAP SCREW, 5/16-24 x 1 1/4	P1005563
12	12	12	37	HEX HEAD CAP SCREW, 1/4-28 x 1 1/2	P1005566
4	4	4	36	HEX HEAD CAP SCREW, 3/8-24 x 1 1/4	P1005278
		REF	35	DRIVE SCREW, #4 x 1/4	P1006196
		REF	34	IDENTIFICATION PLATE, GROTE	B1010865
4	4	4	33	BARREL NUT, .500 OD, .750 LG	B1009904
4	4	4	32	MOUNT, GEAR RACK	A1016018
5	5	5	31	KEY, STD SQUARE, 1/8 x .88 LG	C1013791.
1	1	1	30	SHAFT, CONVEYOR DRIVE	D1009710
2	2	2	29	BUSHING, DRIVE SHAFT	A1013492
2	2	2	28	SPACER, DELRIN, .75, .53, .43	D1009707.
2	2	2	27	RAIL, SIDE, CONVEYOR BED	B1007621
2	2	2	26	DRIVE GEAR, CONVEYOR	A1007613
2	2	2	25	WASHER, RETAINING CAP	A1013491
2	2	2	24	INNER RACE	⚠ A1012989
2	2	2	23	ROLLER CLUTCH, BRG, 5/8 ID, 7/8 OD	P1025156
2	2	2	22	RETAINING CAP	A1013490
2	2	2	21	GREASE FITTING, 1/4-28, STR, LONG	P1010086
	2	2	20	HANGER, OUTSIDE	B1013199
1	1	1	19	SPACER, CONVEYOR MOUNT	A1012872
1	1	1	18	SLIDE RAIL, LH, SHUTTLE	C1013192
2	2	2	17	SPACER, .75, .40, .63	C1013200.
2	2	2	16	SLOT COVER	A1007619
		REF	15	GUARD, SLIDE RAIL, W/ CUTOUT	C1009728
2	2	2	14	PLUNGER BALL, SS, 5/16-18 x 37/94	P1000782
2	2	2	12	RAIL MOUNT, REAR, 22" SHUTTLE	C1013173.
1	1	1	11	RAIL SPACER, RELEASE PIN, REAR	B1009700.
1	1	1	10	BED CONVEYOR	D1009716
5	5	5	9	GEAR, WIRE BELT, 15T, 1/2 BORE	C1007620.
4	4	4	8	SPACER, DELRIN, .75, .53, 2.51	D1009708
1	1	1	7	CONVEYOR BELT, WIRE, 22" CONTINUOUS	P1046910
		REF	6	GUARD, SLIDE RAIL, RH	C1009729
2	2	2	5	BUSHING, SLIDE	B1007623
2	2	2	4	GEAR RACK, CONVEYOR DRIVE	A1009902
1	1	1	3	SLIDE RAIL, RH, SHUTTLE	C1018215.
1	1	1	2	BAR, INSIDE CLAMP	C1013254
1	1	1	1	BAR, SHUTTLE CONVEYOR MOUNT	D1013244

⚠ 2

ASSEMBLY NUMBER 1074911 522 LH
ASSEMBLY NUMBER 1061830
ASSEMBLY NUMBER 1046291

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'
125

SPECIFICATIONS

TITLE: SHUTTLE WIRE BELT CONVEYOR ASSY ONE PIECE SLIDE RAIL

DRAWN BY	DESIGNED BY	CHECKED BY
JDZ/LK		
DATE: 09/02/93	SCALE: 1/2" = 1"	NEXT ASSY

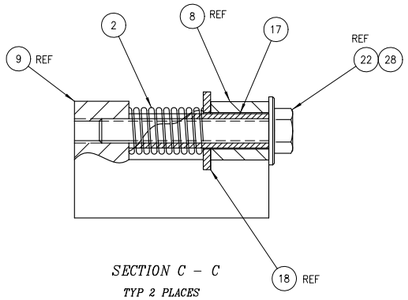
WEIGHT: LBS

GROTE J.E.GROTE COMPANY, INC.

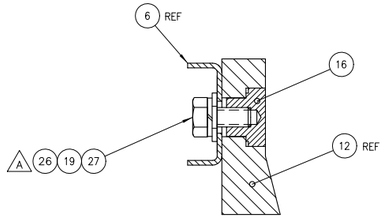
REFERENCE 1013277
DRAWING NUMBER 1046291

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	REV. LOCATIONS OF VARIOUS WASHERS. REMOVED ITEM 25 & 29. QTY OF ITEM 30 WAS 2, & 26 WAS 4.	DLC	JRB	9-28-01
B	ADDED ITEM 32.	DLC		4-22-02

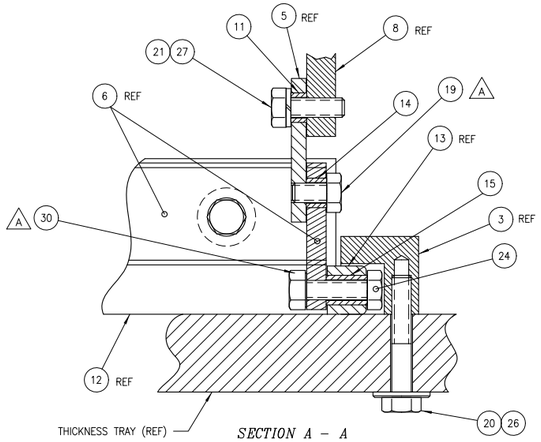
1017075



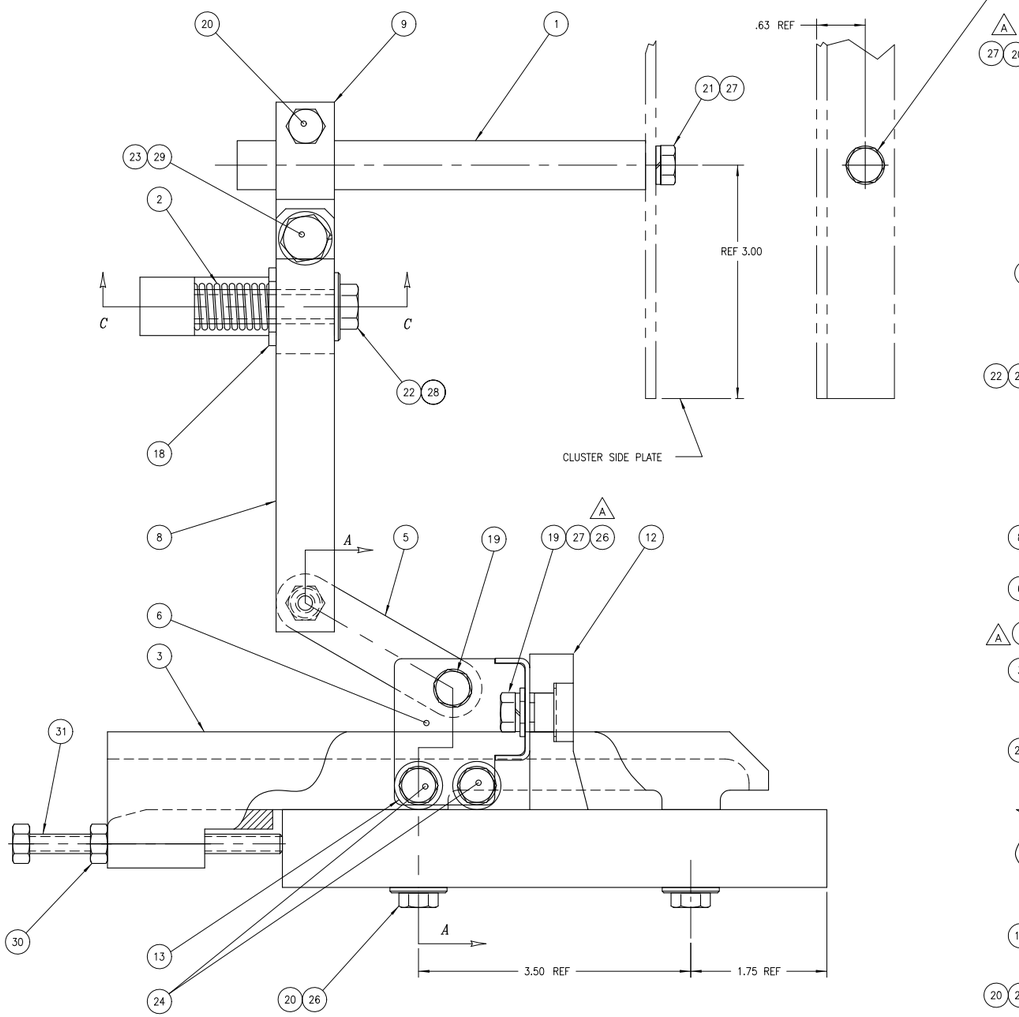
SECTION C – C
TYP 2 PLACES

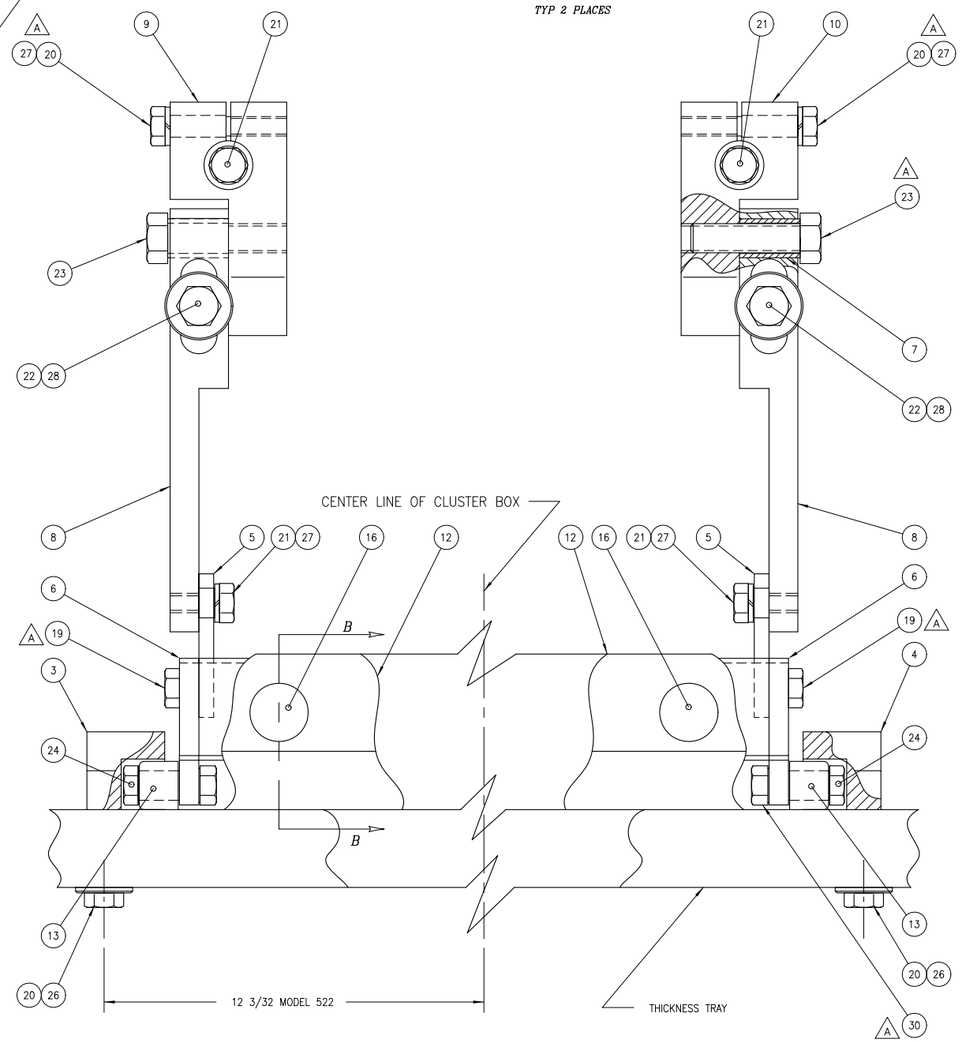


SECTION B – B
TYP 4 PLACES



SECTION A – A
TYP 2 PLACES





NO REQ'D	ITEM NO	DESCRIPTION	
B	2	32	SPACER, CROSS TIE & PUSHER MOUNT (NOT SHOWN) 1072918
	2	31	SCREW, 1/4-28 x 3.25 LG D1013694.
A	6	30	HEX NUT 1/4-28 P1005338
A		29	
	2	28	FLATWASHER 5/16 P1005344
	12	27	LOCKWASHER 1/4 P1005326
A	6	26	FLATWASHER 1/4 P1005282
A		25	
	4	24	HEX HEAD CAP SCREW 1/4-28 x 1 P1005376
	2	23	HEX HEAD CAP SCREW 3/8-24 x 1 1/2 P1005279
	2	22	HEX HEAD CAP SCREW 5/16-24 x 2 1/4 P1005564
	4	21	HEX HEAD CAP SCREW 1/4-28 x 3/4 P1005325
	6	20	HEX HEAD CAP SCREW 1/4-28 x 1 1/2 P1005566
	6	19	HEX HEAD CAP SCREW 1/4-28 x 1/2 P1005273
	2	18	WASHER, SPRING A1011062
	2	17	SPACER, SS, .44, .31, 1.80 C1009154.
	4	16	ANCHOR NUT, 1/4-28, .500 LG C1009489.
	4	15	SPACER, SS, .38, .27, .53 C1009491.
	2	14	SPACER, SS, .38, .27, .26 C1009494.
	4	13	ROLLER, PUSHER BAR A1009495
	1	12	PUSHER BAR, 22.50 LG C1009502.
	2	11	SPACER, SS, .38, .27, .20 C1009493.
	1	10	ADJUSTMENT BLOCK, WELDMENT, LH B1025468.
	1	9	ADJUSTMENT BLOCK, WELDMENT, RH B1025467
	2	8	ARM, PIVOT A1025469
	2	7	SPACER, SS, .50, .39, .78 C1009492.
	1	6	PUSHER MOUNT, WELD ASSY, 22.25 C1009484
	2	5	CONNECTING ARM A1009490
	1	4	GUIDE, ROLLER, LINEAR PUSHER, LH C1037124
	1	3	GUIDE, ROLLER, LINEAR PUSHER, RH C1037123
	2	2	SPRING, COMPRESSION, SS P1009927
	2	1	STANDOFF, DL TP, .63 OD, 5.25 LG D1015051

ASSEMBLY NUMBER

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°-30'
125

TITLE
PUSHER ASSY, LINEAR, 22"
1 X 7 PIVOT THICKNESS TRAY

DRAWN BY	DESIGNED BY	CHECKED BY
CRM		
DATE 7-21-94	SCALE 1" = 1"	NEXT ASSY

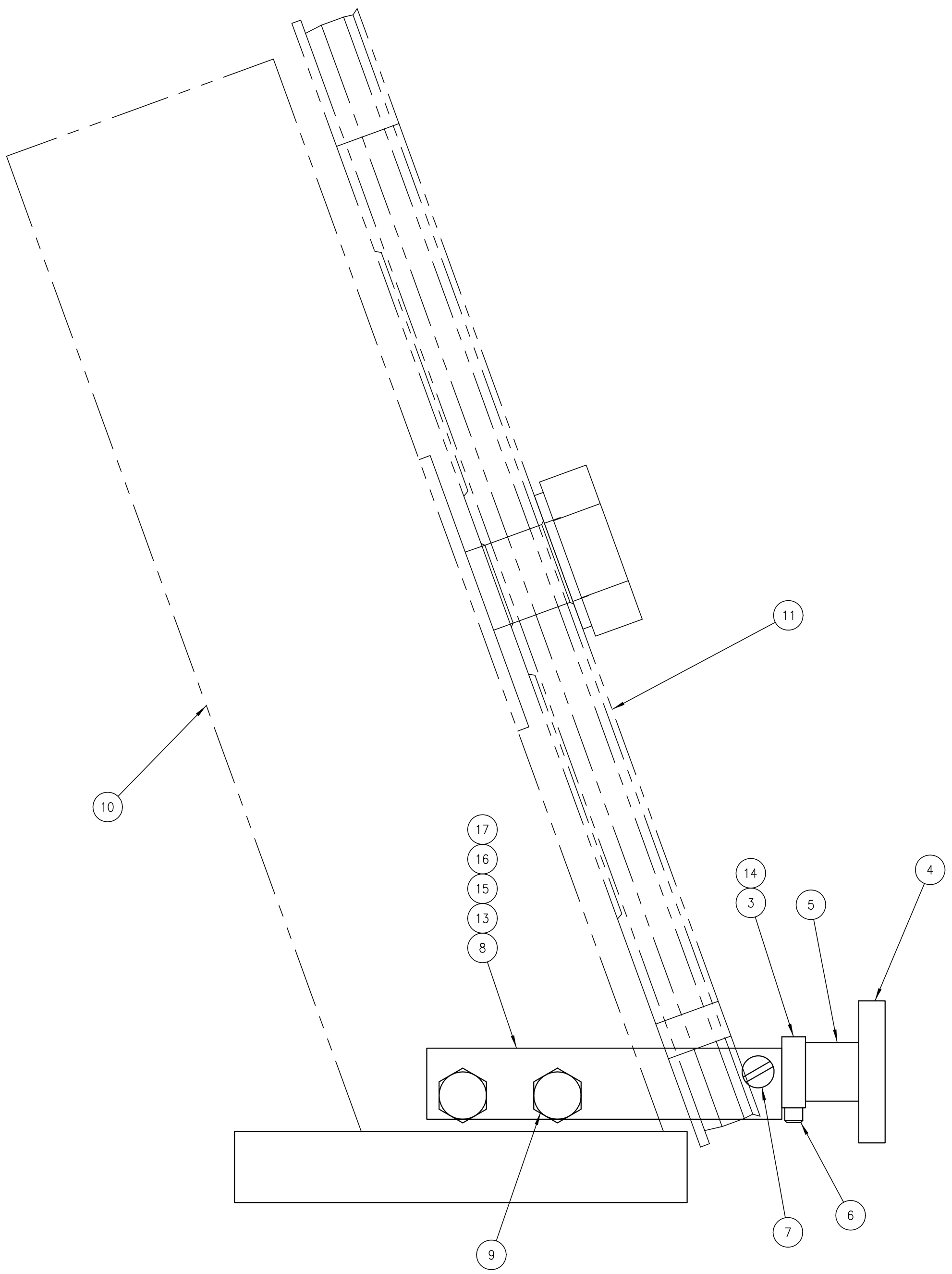
SPECIFICATIONS
WEIGHT LBS

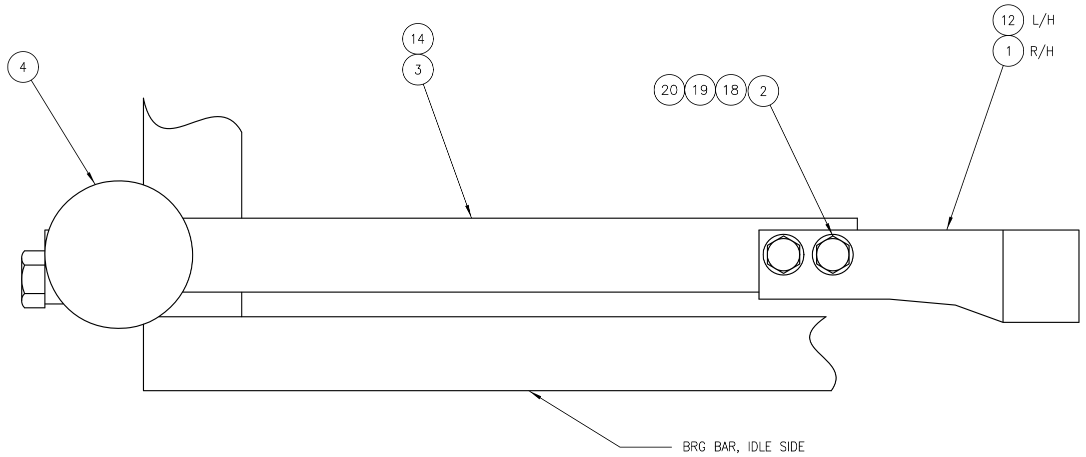
J.E.GROTE COMPANY, INC.

REFERENCE
DRAWING NUMBER 1017075

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	REDRAWN ON CAD, SEE VOID DWG FOR PREV CHANGES	EPL		06/06/94
B	REPLACED ITEM 2 W/ITEMS 18, 19 & 20 FOR ASSY 1021202.	DLC	BG	9-5-07

1010229





REV	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
B			2			20	HEX NUT 10-32	1005311
B			2			19	LOCKWASHER #10	1013789
B			2			18	HEX HEAD CAP SCREW, 10-32 x 1"	1005335
	1					17	PIVOT ARM, IDLE, BOTTOM, LH, SS	1114365
		1				16	PIVOT ARM, IDLE SIDE, BOTTOM, RH, SS	A1068179
			1			15	PIVOT ARM MOUNT, WIPER	B1008175
			1			14	ARM, WIPER, BOTTOM IDLE SIDE	A1008172
				1		13	PIVOT ARM, IDLE SIDE, BOTTOM, L/H	B1008258
	1			1		12	WIPER, IDLE SIDE, BOTTOM, L/H	B1009460
	REF	REF	REF	REF	REF	11	PULLEY, BLADE	C1003877
	REF	REF	REF	REF	REF	10	SIDE MOUNT BLOCK, R/H	C1007998
	2	2	2	2	2	9	HEX HEAD CAP SCREW, 5/16-24 x 1 1/2"	P1005342
					1	8	PIVOT ARM, IDLE SIDE, BOTTOM	A1007393
	1	1	1	1	1	7	PLUNGER, BALL, 5/16-18	P1000782
	1	1	1	1	1	6	SETSCREW, 10-32 x 1/4"	P1006243
	1	1	1	1	1	5	SPACER, .62, .375, .562	B1018588.
	1	1	1	1	1	4	HANDLE, PULL PIN	B1007390
	1	1		1	1	3	ARM, WIPER, BOTTOM IDLE SIDE	A1007608
B	2	2		2	2	2	HEX HEAD CAP SCREW, 10-32 x 3/4"	P1005310
		1	1		1	1	WIPER, IDLE SIDE, BOTTOM, R/H	B1009439
	ASSEMBLY NUMBER (SEE 1118602 FOR METRIC VERSION) 1114364 L/H	ASSEMBLY NUMBER 1068180 R/H	ASSEMBLY NUMBER 1021202 R/H 636	ASSEMBLY NUMBER 1018589 L/H	ASSEMBLY NUMBER 1010229 R/H			

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°-30'
125

SPECIFICATIONS

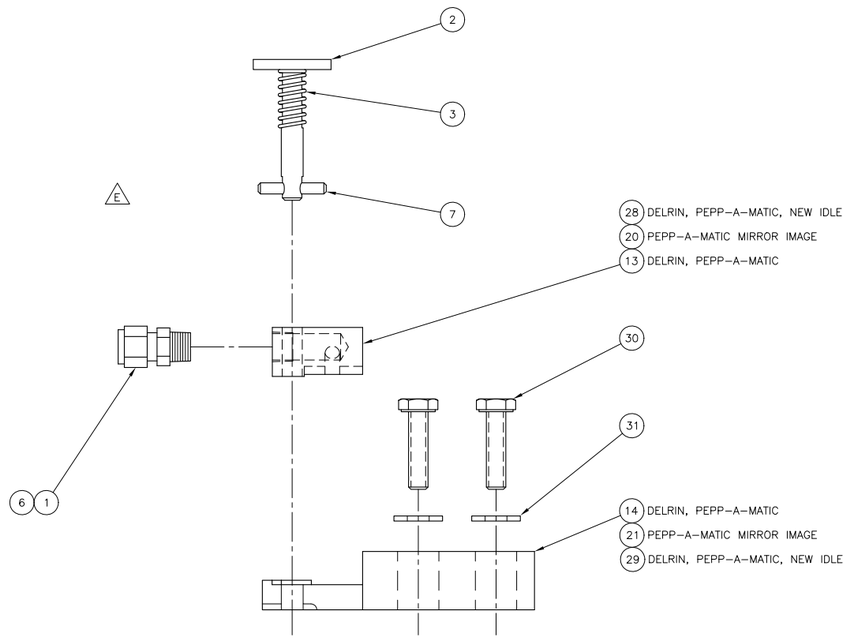
TITLE: WIPER ASSEMBLY, IDLE SIDE, BOTTOM

DRAWN BY	DESIGNED BY	CHECKED BY
TLW		
DATE 07/25/86	SCALE 1" = 1"	NEXT ASSY
WEIGHT LBS	GROTE J.E.GROTE COMPANY, INC.	REFERENCE
		DRAWING NUMBER 1010229

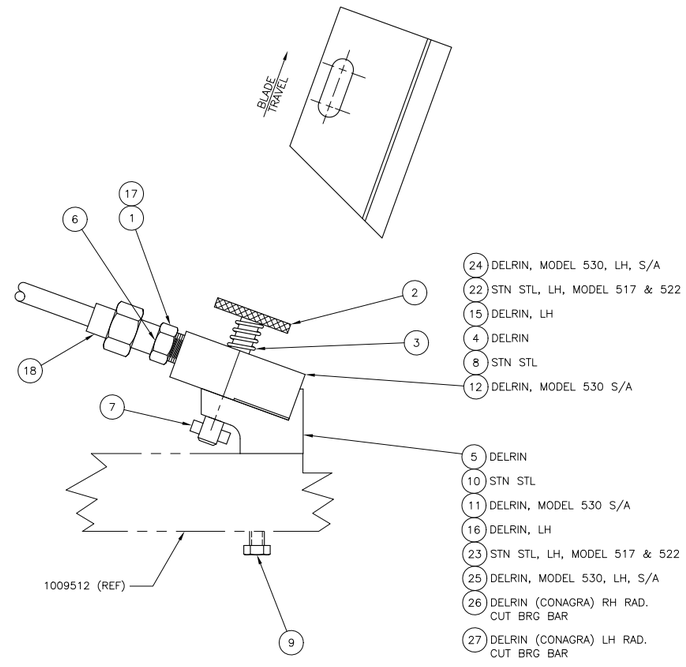
SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
C	SEE VOIDED DWG FOR REVISION HISTORY	PMP	JBG	11-2-99
D	REDRAWN IN CAD	PMP	JBG	11-2-99
E	ADDED ITEMS 30 & 31. ADDED ASSY VIEW FOR 1012200, 1014391 & 1099770.	DLC		5-16-01

1009520

ASSY NO.	DESCRIPTION
1012200	DELRIN PEPP-A-MATIC
1014391	DELRIN PEPP-A-MATIC, MIRROR IMAGE
1099770	DELRIN, LH, PEPP-A-MATIC, NEW IDLE



ASSY NO.	DESCRIPTION
1009520	DELRIN MOD. 517 & 522 S/A
1009730	STN STL MOD. 517 & 522 S/A
1011546	MODEL 530 S/A
1011370	DELRIN, LH
1012865	DELRIN, RH MOD. 636 S/A
1012866	DELRIN, LH MOD. 636 S/A
1016537	STN STL LH, MOD. 517 & 522 S/A
1017010	DELRIN, LH MOD. 530 S/A
1028395	DELRIN, RH 517 & 522 BASE EXTRA CUT
1028396	DELRIN, LH 517 & 522 BASE EXTRA CUT



SEE 1101605 FOR METRIC VERSIONS

E	2					2				2				31	FLATWASHER 1/4"	1005282
E	2					2				2				30	HEX HEAD CAP SCREW 1/4-28 X 1"	1005376
	1													29	WIPER, BASE LH PEPP NEW IDLE ASSY	1099768
	1													28	WIPER, TOP LH PEPP NEW IDLE ASSY	1099769
		1												27	WIPER BASE, BLADE, LH MACHINE	C1028393
			1											26	WIPER BASE, BLADE, RH MACHINE	C1028392
				1										25	WIPER, BLADE, BASE, LH, DELRIN	B1017009
				1										24	WIPER, BLADE, TOP, LH, DELRIN	B1017008
					1									23	WIPER, BLADE, BASE, LH, STN STL	C1011369
					1									22	WIPER, BLADE, TOP, LH, STN STL	B1016529
						1								21	WIPER BASE, PEPP, MIRROR IMAGE	B1012199
						1								20	WIPER TOP, PEPP, MIRROR IMAGE	B1012197
							1	1						19	MOUNT PLATE, WIPER BASE (NS)	A1012860
			1							1				18	SLEEVE CONNECTOR, HOSE	1008995
			1							1				17	MALE CONNECTOR, HOSE	1008994
						1		1						16	WIPER, BASE, LH	B1011368
	1					1		1						15	WIPER, TOP, LH	C1011748
									1					14	WIPER, BASE, PEPP-A-MATIC	B1012198
									1					13	WIPER, TOP, PEPP-A-MATIC	B1012196
										1				12	WIPER BLADE, TOP	B1011336
										1				11	WIPER, BLADE, BASE	C1011337
											1			10	WIPER, BLADE, BASE	1009480
	2	2	2	2		2	2	2		2	2	2		9	HEX HEAD CAP SCREW 10-32 UNF x 1 1/4 LG	1006018
											1			8	WIPER, BLADE, TOP	1009479
	1	1	1	1	1	1	1	1	1	1	1	1	1	7	LOCKING PIN	1001590
	1	1	1		1	1	1	1	1	1		1	1	6	INSERT, TUBING	P1011558
								1					1	5	WIPER, BLADE, BASE	1009478
		1						1					1	4	WIPER, BLADE, TOP	1009477
	1	1	1	1	1	1	1	1	1	1	1	1	1	3	COMPRESSION SPRING	1000778
	1	1	1	1	1	1	1	1	1	1	1	1	1	2	LOCKING HANDLE	1009475
	1	1	1		1	1	1	1	1	1		1	1	1	FITTING, MALE CONNECTOR	P1011559
	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
	ASSEMBLY NUMBER	LH PEPPMATIC, NEW STYLE SS IDLE ASSY.	ASSEMBLY NUMBER	ASSEMBLY NUMBER	ASSEMBLY NUMBER	ASSEMBLY NUMBER	RH PEPPMATIC, OLD STYLE ALUM IDLE ASSY.	ASSEMBLY NUMBER	ASSEMBLY NUMBER	ASSEMBLY NUMBER	LH PEPPMATIC, OLD STYLE ALUM IDLE ASSY.	ASSEMBLY NUMBER	ASSEMBLY NUMBER	ASSEMBLY NUMBER		
	1099770		1028396	1028395	1017010	1016537	1014391	1012866	1012865	1011370	1012200	1011546	1009730	1009520		

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'
125

SPECIFICATIONS

TITLE: WIPER ASSEMBLY, WITH WATER

DRAWN BY	DESIGNED BY	CHECKED BY
JDZ		
DATE: 11-27-84	SCALE: 1" = 1"	NEXT ASSY

WEIGHT: LBS

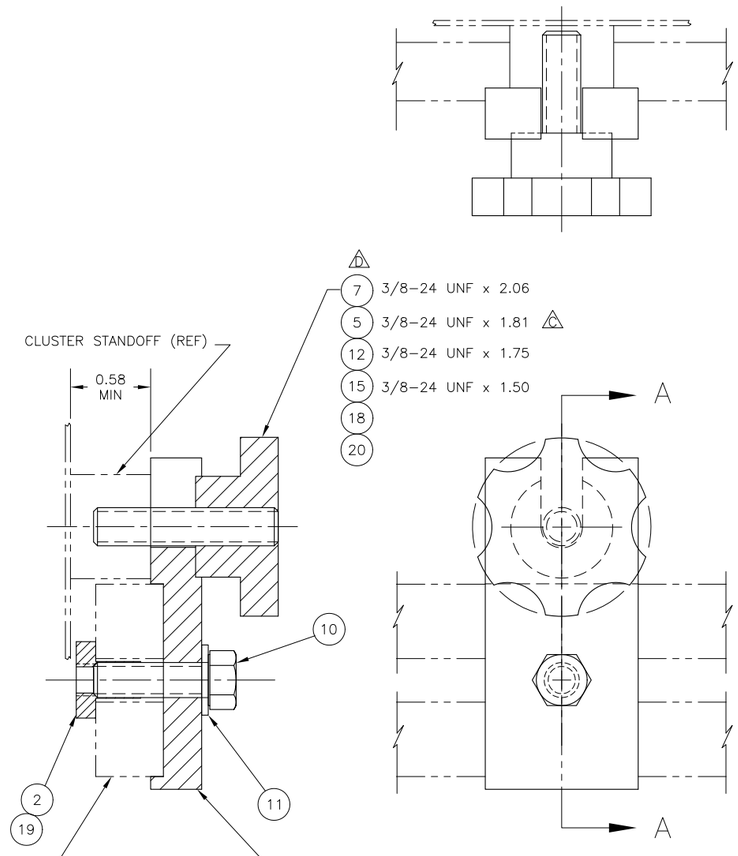
J.E.GROTE COMPANY, INC.

REFERENCE

DRAWING NUMBER: 1009520

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE
A	REMOVED ITEMS 3 AND 4	TLW		5/21/85
B	ADDED ASSY NO 1011490	JDZ		6/10/85
C	1.81 WAS 1.88	JDZ		9/17/85
D	3/8–24 WAS 3/8–16	JDZ		11/15/85
E	ADDED ASSY NO 1013392	TLW		11/18/85
F	ITEM NO 5 WAS ON ASSY 1013392 ADDED ITEM NO 7 TO ASSY 1013392	TLW		11/25/85
G	ADDED ITEMS 10 AND 11	TLW		12/11/85
H	REMOVED ASSY NO 1017128	JDZ		6/13/88
J	T–NUT PART NO WAS 1010303	JDZ		6/13/88
K	REDRAWN ON ACAD	BDW	RKH	8/26/98
L	PART# 1019842 WAS 1010304, 1083535 WAS 1028828, 1047394 WAS 1005562,	PMP	JBG	6–7–99
M	ITEM 7 WAS 1011497, ITEM 6 WAS 1012352, PER B/M.DLC	JBG		2–15–07

1010406



SECTION A–A

NOTE:
FOR TAPPED STYLE CLUSTER MOUNT PLATE
SEE DWG B1010343 AND B1010632

ITEM NO	DESCRIPTION	
21	MOUNT CLUSTER, LOWER ENTRANCE	B1092367
20	KNOB, GROTE LOGO, SS	B1092366.
19	TEE NUT, ROUND	A1083535
18	KNOB ASSY, GROTE LOGO, SS	B1061813
17	CLUSTER MOUNT, UNDERHUNG	B1024565
16	TIGHTENING KNOB	1001583
15	TIGHTENING KNOB, 1.50 LG	C1017677
14	CLUSTER MOUNT PLATE	B1024490
13	CLUSTER MOUNT PLATE	B1019842
12	TIGHTENING KNOB, 1.75 LG	C1014593
11	5/16 LOCKWASHER	P1005330
10	5/16–24 HX HD CAP SCREW △1	P1047394
9	MOUNT, CLUSTER, 36" S/A AND 40" S/A	B1013388
8	CLUSTER MOUNT PLATE	B1012352
7	KNOB, SS, 1.19 △M	1043060
6	CLUSTER MOUNT PLATE △M	1011489
5	TIGHTENING KNOB	B1038937
4	CLUSTER MOUNT	B1010343
3	KNOB, STD, TAP, 1.50 DIA, 3/8–24	A1010305
2	TEE NUT △1	A1083535
1	CLUSTER MOUNT PLATE △1	B1019842

NO REQ'D	ASSEMBLY NUMBER
1	1092368
1	1064738
1	1061820
1	1039242
1	1030042
1	1026532
1	1024491
1	1019843
1	1014596
1	1013392
1	1012353
1	1011490
1	1012406
1	1010406

TOLERANCES
(EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°–30'
125

SPECIFICATIONS

TITLE
CLUSTER MOUNT ASSY, STD

DRAWN BY	DESIGNED BY	CHECKED BY
JRM		
DATE	SCALE	NEXT ASSY
3/12/85	1" = 1"	

WEIGHT
LBS

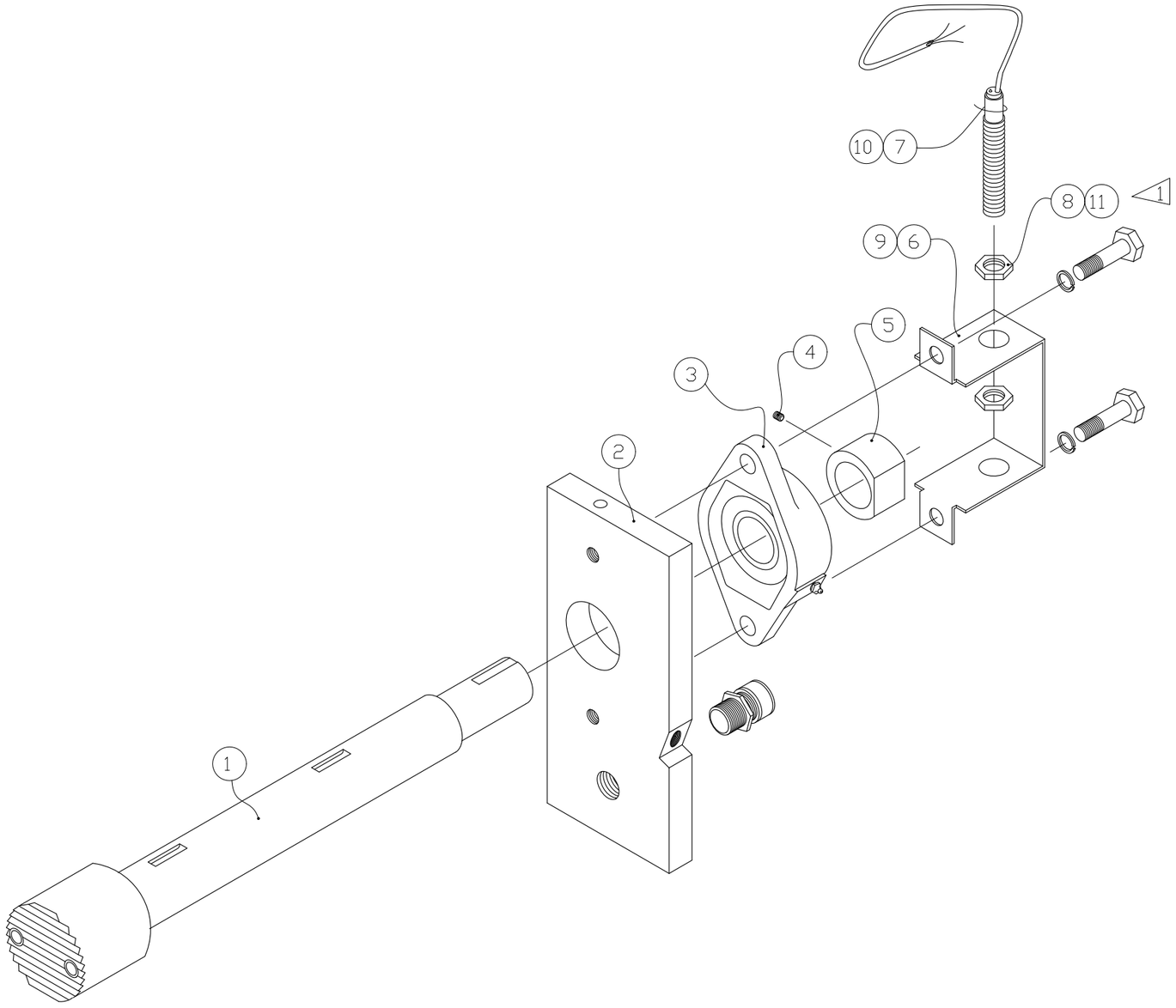
J.E.GROTE COMPANY, INC.

REFERENCE

DRAWING NUMBER
1010406

SYM	REVISION RECORD	BY	DATE

1066696



NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
2		11	PROX SENSOR, M12 x 1 METRIC THREAD HEX NUT	P1054047
1		10	PROXIMITY SENSOR, INDUCTIVE, N/C	P1054047
1		9	MOUNT, PROXIMITY SENSOR, STROKE COUNTING	B1066699
	2	8	PROX SENSOR, M18 x 1 METRIC THREAD HEX NUT	P1062116
	1	7	PROXIMITY SENSOR, INDUCTIVE, N/C	P1062116
	1	6	MOUNT, PROXIMITY SENSOR, STROKE COUNTING	B1066697
1	1	5	HUB, SENSING, STROKE COUNT	A1062118
1	1	4	CUPPOINT SETSCREW, 1/4"-28 x .25" LG	P1021361
REF	REF	3	BEARING UNIT, PLATED (REF CLUTCH DRIVE ASSY)	1007058
REF	REF	2	DRIVE SHAFT SUPPORT, BRG MOUNT (REF CLUSTER DRV ASSY)	1006864
REF	REF	1	30" DRIVE SHAFT, CLUSTER (REF CLUSTER DRV ASSY)	1062226
REF	REF	1	22" DRIVE SHAFT, CLUSTER (REF CLUSTER DRV ASSY)	1006876
REF	REF	1	17" DRIVE SHAFT, CLUSTER (REF CLUSTER DRV ASSY)	1006863

NOTE:

1. TO PREVENT MECHANICAL DAMAGE TO THE PROXIMITY SENSOR, DURING INSTALLATION DO NOT EXCEED 35 LB FT (48Nm) TIGHTENING TORQUE.

SEE 1068099 FOR 636 S/A's

ASSEMBLY NUMBER 1066698 - DC

ASSEMBLY NUMBER 1066696 - AC

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°30'

SPECIFICATIONS
SEE NOTE 1

TITLE
STROKE COUNTING ASSY, PROXIMITY SENSOR

SCALE	DRAWN BY	REF
N.T.S.	S.A.NEWHOUSE	CLUTCH DRIVE ASSY
DATE	CHK'D BY	NEXT ASSY
07-20-94		

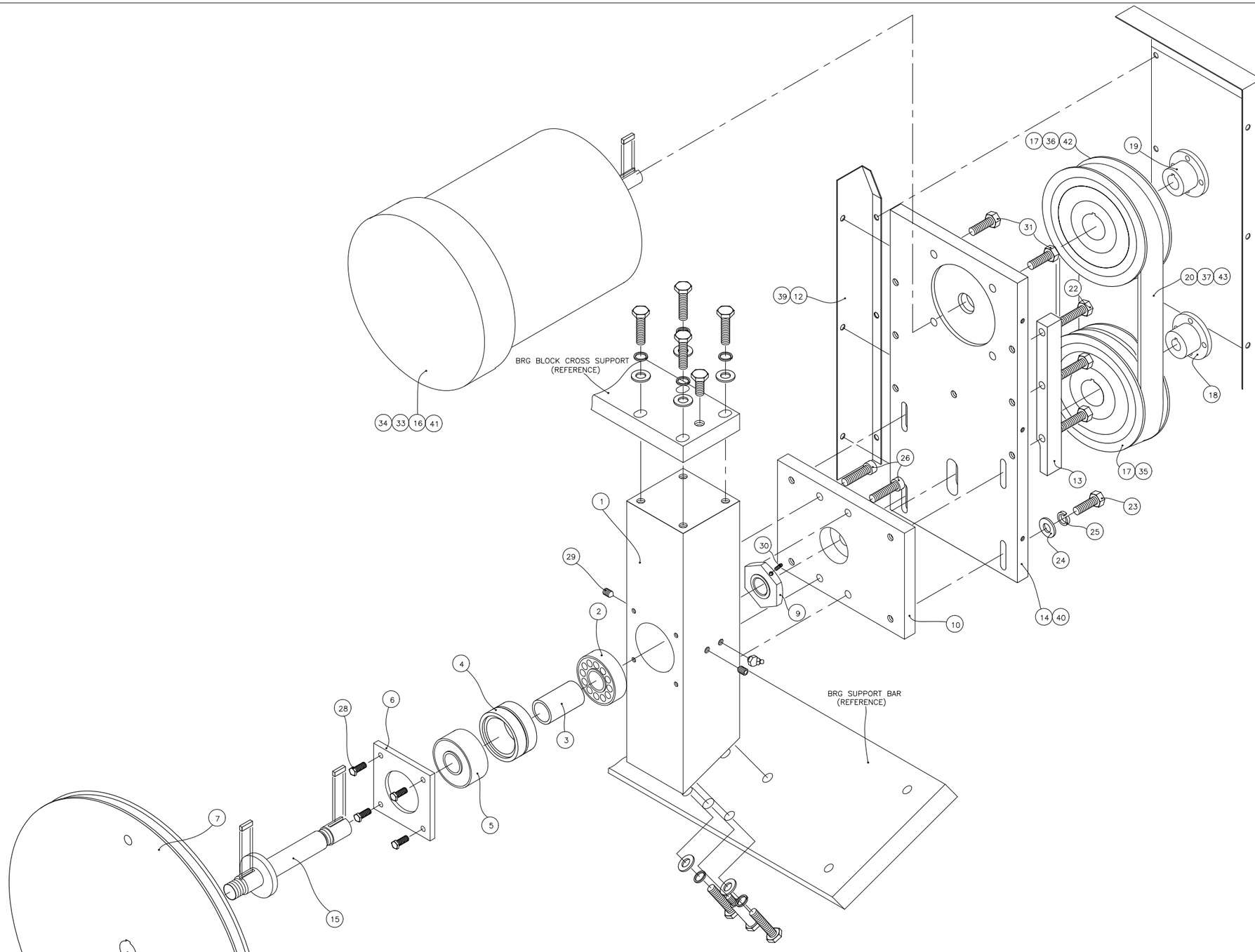
MACH

DRAWING NUMBER
1066696

J.E.GROTE COMPANY, INC.

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE

1046248



NOTE: INNER SEALS OF BALL BEARINGS ARE TO BE REMOVED BEFORE INSTALLATION.

NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	NO REQ'D	ITEM NO	DESCRIPTION	
1					43	BELT, A , PITCH LGTH 41.3" LG	1036745
1					42	PULLEY, A BELT 4.5" PD	1026471
1					41	MOTOR 1.5 HP	P1018044
	1				40	MOUNTING PLATE, BELT TENSION	D1051701
	1				39	GUARD, SIDE BELT DRIVE	C1051712
	1				38	GUARD, BELT DRIVE	D1051711
		1			37	BELT, A, PITCH LG 42.3, OUT LG 43.2	P1000655
		1			36	PULLEY, A BELT, 5.2 PD	P1047267
1		1			35	PULLEY, A BELT, 7.00 PD	A1023875
		1			34	MOTOR, 1.5 HP	P1005584
	1		1		33	MOTOR, 2 HP	P1047617
7	7	7	7	7	32	HHCS 1/4"–28 x 1/2"	P1005273
4	4	4	4	4	31	HHCS 3/8"–16 x 1"	P1005321
1	1	1	1	1	30	CUPPOINT SET SCREW 8–32 x 1/4"	P1005315
1	1	1	1	1	29	CONEPOINT SET SCREW 1/4–20 x 3/8"	P1005316
4	4	4	4	4	28	HHCS 10–32 x 3/4"	P1005310
1	1	1	1	1	27	CUPPOINT SET SCREW 1/4"–20 x 3/8"	P1005314
4	4	4	4	4	26	SOC HD CAP SCREW 3/8"–24 x 1 1/4"	P1005975
4	4	4	4	4	25	LOCKWASHER 3/8"	P1005229
4	4	4	4	4	24	FLATWASHER 3/8"	P1005281
4	4	4	4	4	23	HHCS 3/8"–24 x 1"	P1005568
6	6	6	6	6	22	HHCS 3/8"–24 x 1 3/4"	P1005334
3	3	3	3	3	21	HHCS 1/4"–20 x 1/2"	P1006010
	1		1	1	20	BELT, A, PITCH LG 36.3, OUT LG 37.2	P1024633
	1		1	1	19	LOCKING HUB, 7/8" BORE	C1019988
2	1	2	1	1	18	LOCKING HUB, 5/8" BORE	A1001610
	2		2	2	17	PULLEY, A BELT, 4.00 PD	A1001609
				1	16	MOTOR, 2 HP	P1014498
1	1	1	1	1	15	DRIVE SIDE BRG SHAFT	B1002866
1		1	1	1	14	MOUNTING PLATE, BELT TENSION	D1033098
2	2	2	2	2	13	STIFFENER, BELT TENSION	C1023872
1		1	1	1	12	GUARD, SIDE, BELT DRIVE	C1023892
1		1	1	1	11	GUARD, BELT DRIVE	D1023893
1	1	1	1	1	10	ADJUSTMENT PLATE, MOTOR MOUNT	C1023869
1	1	1	1	1	9	IDLE SIDE BRG LOCKNUT	A1001008
1	1	1	1	1	8	BLADE PULLEY LOCKNUT, ACORN STYLE	B1024638
1	1	1	1	1	7	BLADE PULLEY, 12.375 CROWN DIA	C1003877
1	1	1	1	1	6	BEARING HOUSING CAP	B1002728
1	1	1	1	1	5	BEARING, BALL, DBL ROW	P1000047
1	1	1	1	1	4	BRG OUTER RACE SPACER	A1001050
1	1	1	1	1	3	BRG SPACER DRIVE SIDE	A1001066
1	1	1	1	1	2	BEARING, BALL, SGL ROW	P1000046
1	1	1	1	1	1	BEARING HOUSING, DRIVE SIDE	D1004615

ASSEMBLY NUMBER 1073931 – 1.5 HP	ASSEMBLY NUMBER 1051716 – 2 HP	ASSEMBLY NUMBER 1047446 – 1.5 HP	ASSEMBLY NUMBER 1047618 – 2 HP WDN	ASSEMBLY NUMBER 1046248 – 2 HP

TOLERANCES (EXCEPT AS NOTED)
.000 ±.005
.00 ±.01
FRAC ±.03
ANGLE ± 0°-30'
125

SPECIFICATIONS

TITLE: BEARING BLOCK ASSY, DRIVE SIDE BELT DRIVE

DRAWN BY	DESIGNED BY	CHECKED BY
TAS/RKH		
DATE: 11–19–91	SCALE: 1/2" = 1"	NEXT ASSY

WEIGHT: LBS

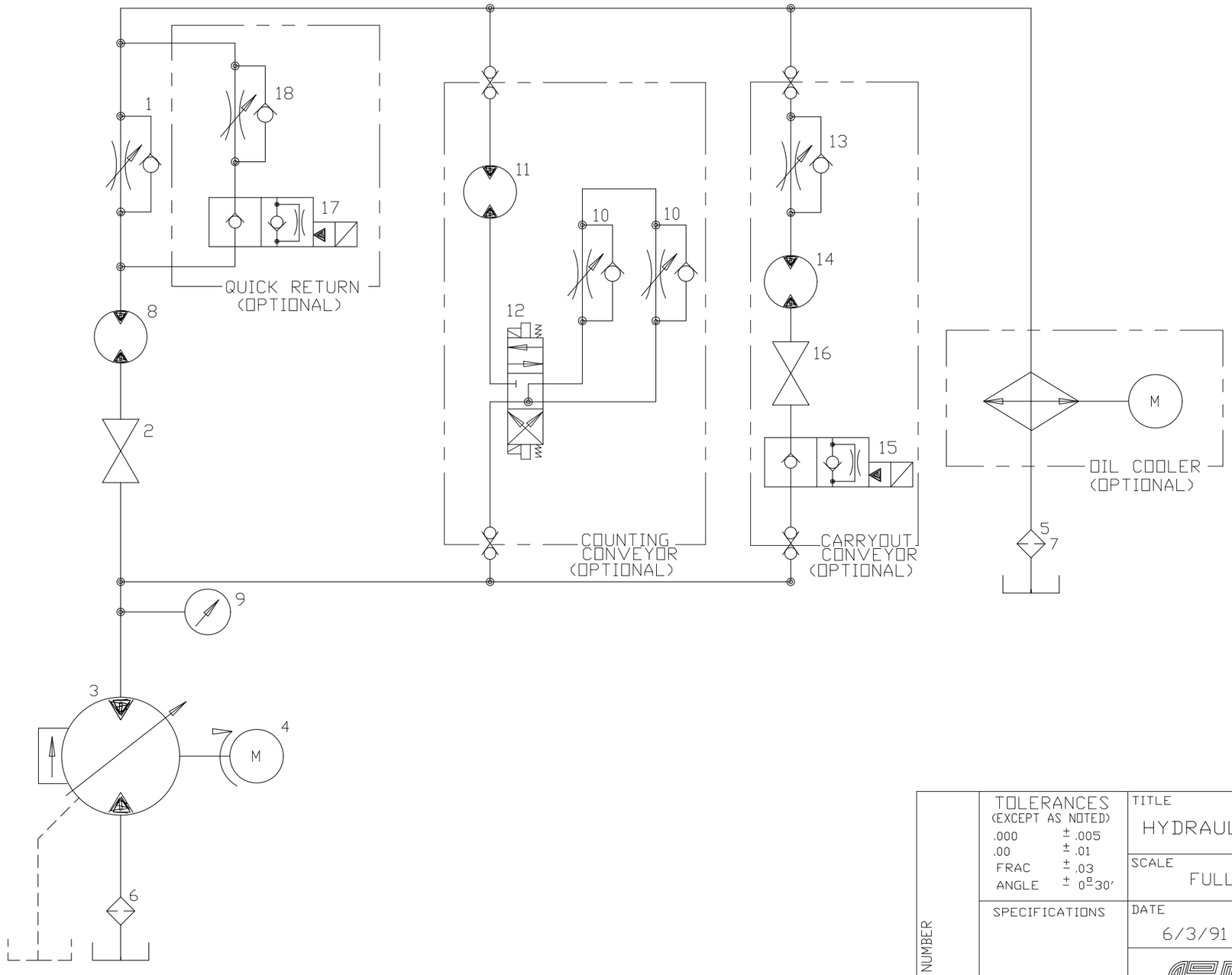
J.E.GROTE COMPANY, INC.

REFERENCE

DRAWING NUMBER: 1046248

SYM	REVISION RECORD	BY	DATE

1044997



	ITEM NO	DESCRIPTION
QUICK RETURN (OPTIONAL)	18	VALVE, FLOW CONTROL
	17	VALVE, DIR. CONTROL
CARRYOUT CONVEYOR (OPTIONAL)	16	VALVE SHUTOFF
	15	DIR. CONTROL VALVE
	14	MOTOR
	13	VALVE, FLOW CONTROL
COUNTING CONVEYOR (OPTIONAL)	12	DIR. CONTROL VALVE
	11	MOTOR
	10	VALVE, FLOW CONTROL
	9	PRESSURE GAUGE
	8	HYD MOTOR
	7	FILTER UNIT
	6	SUCTION STRAINER
	5	FILTER CARTRIDGE
	4	MOTOR
	3	PUMP
	2	VALVE SHUTOFF
	1	VALVE, FLOW CONTROL

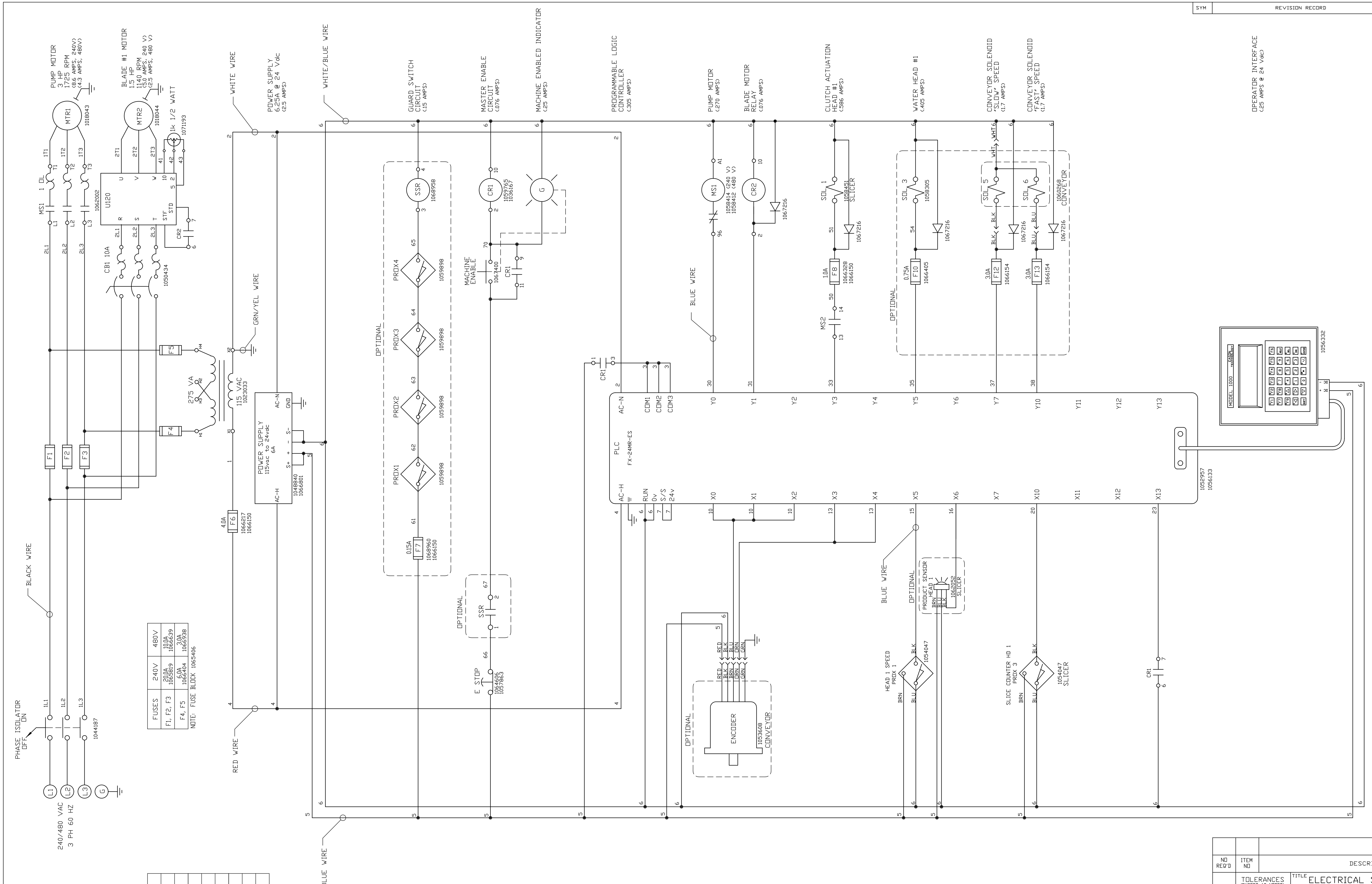
ASSEMBLY NUMBER

TOLERANCES (EXCEPT AS NOTED)
.000 ± .005
.00 ± .01
FRAC ± .03
ANGLE ± 0°30′

SPECIFICATIONS

TITLE
HYDRAULIC CIRCUIT DIAGRAM, 1 STA S/A

SCALE	DRAWN BY	REF
FULL	TAS	
DATE	CHK'D BY	NEXT ASSY
6/3/91		
		MACH
J.E.GROTE COMPANY, INC		DRAWING NUMBER 1044997


PUMP MOTOR 3 HP 1725 RPM (8.6 AMPS, 240V) (4.3 AMPS, 480V)
BLADE #1 MOTOR 1.5 HP 1140 RPM (5.0 AMPS, 240 V) (2.5 AMPS, 480 V)
WHITE WIRE
POWER SUPPLY 6.25A @ 24 Vdc (.25 AMPS)
WHITE/BLUE WIRE
GUARD SWITCH CIRCUIT (.15 AMPS)
MASTER ENABLE CIRCUIT (.076 AMPS)
MACHINE ENABLED INDICATOR (.25 AMPS)
PROGRAMMABLE LOGIC CONTROLLER (.305 AMPS)
PUMP MOTOR (.270 AMPS)
BLADE MOTOR RELAY (.076 AMPS)
CLUTCH ACTUATION HEAD #1 (.586 AMPS)
WATER HEAD #1 (.405 AMPS)
CONVEYOR SOLENOID "SLOW" SPEED (1.7 AMPS)
CONVEYOR SOLENOID "FAST" SPEED (1.7 AMPS)
OPERATOR INTERFACE (.25 AMPS @ 24 Vdc)
MTR1
MTR2
U120
GRN/YEL WIRE
275 VA
115 VAC
POWER SUPPLY 115vac to 24vdc 6A
PLC FX-24MR-ES
BLACK WIRE
BLUE WIRE
RED WIRE
PHASE ISOLATOR
240/480 VAC 3 PH 60 HZ
OPTIONAL
ENCODER
CONVEYOR
E STOP
MACHINE ENABLE
SLICER
PRODUCT SENSOR HEAD 1
HEAD 1 SPEED PROX 1
SLICE COUNTER HD 1 PROX 3
MODEL 1000

FUSES	240V	480V
F1, F2, F3	20.0A 1065819	10.0A 1066639
F4, F5	6.0A 1066404	3.0A 1066938

NOTE: FUSE BLOCK 1065406

INVERTER SETTINGS	
P1	57
P2	29
P3	60
P7	10.0
P8	10.0
P9	7.5
P21	29
P22	57
P79	2

NOTES:

1. Low voltage wires (24vdc) and High voltage wires (115/230vac) should not be run parallel to each other and should not be run closer than an inch from each other.
2. Make sure that all mounting holes in the enclosure have o-rings or silicon around them to seal the enclosure. Water damage will occur if there are any holes without proper sealing.
3. Wire 67 becomes wire 66 when prox safety circuit not used.

SYM	REVISION RECORD	DRAWN BY	REQ'D BY	DATE

1078766

NO REQ'D	ITEM NO	DESCRIPTION

TITLE ELECTRICAL SCHEMATIC,522 S/A INVERTER, 240 VAC

TOLERANCES (EXCEPT AS NOTED) .000 ± .005, .00 ± .01, FRAC ± .03, ANGLE ± 0°30'

DRAWN BY	DESIGNED BY	CHECKED BY
DJS		

DATE	SCALE	NEXT ASSY
05/22/97	NONE	1065024

SPECIFICATIONS — WEIGHT LBS

REFERENCE 1066480

DRAWING NUMBER 1078766

ASSEMBLY NUMBER

J.E.GROTE COMPANY, INC.