



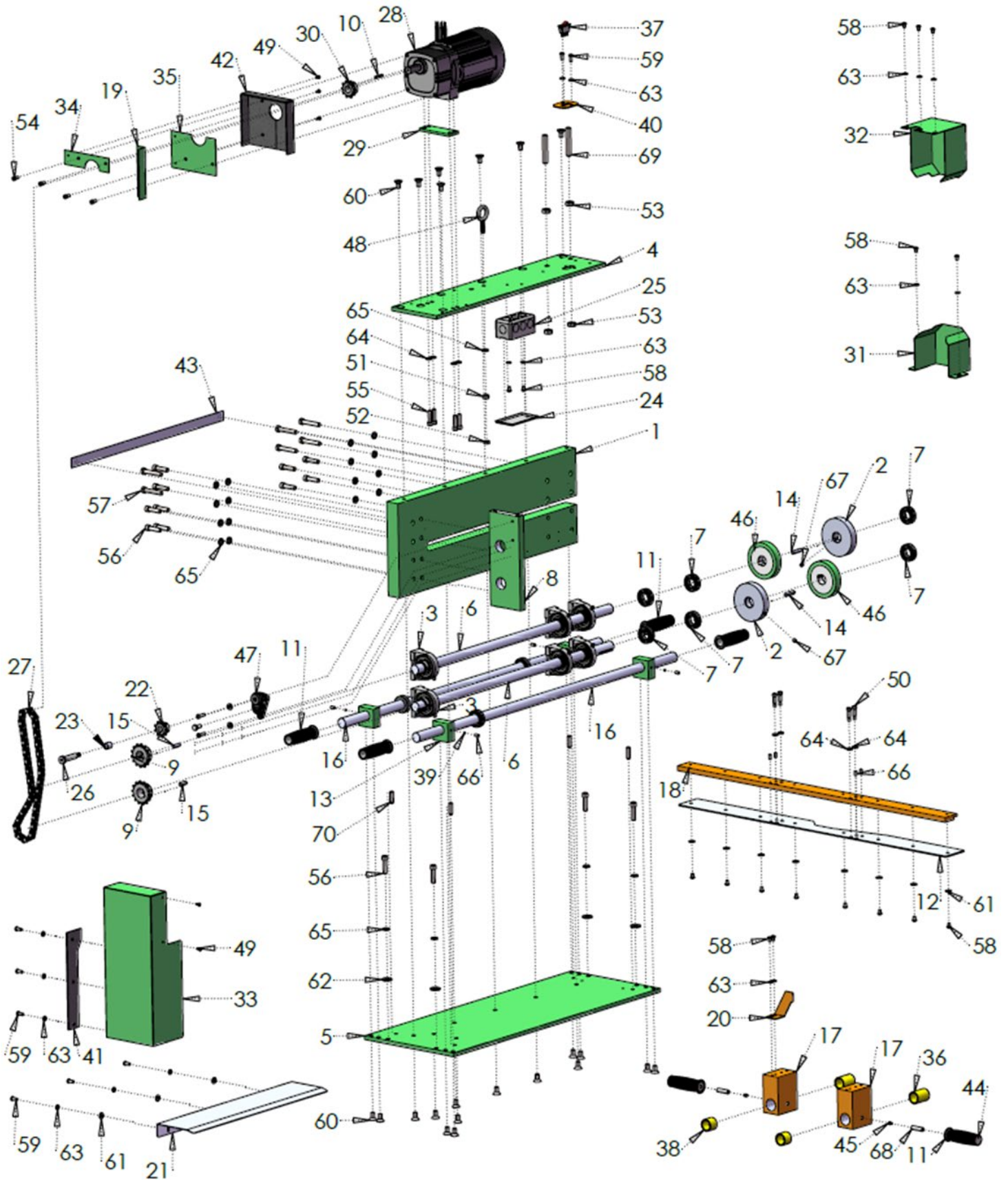
Model SLE24-16 Shown on Optional Stand

## MODEL SLE24-16 SLITTER OPERATION, PARTS & MAINTENANCE MANUAL

<b>Model:</b>	<b>Purchased From:</b>
<b>Serial #:</b>	<b>Date Received:</b>

USA  MADE

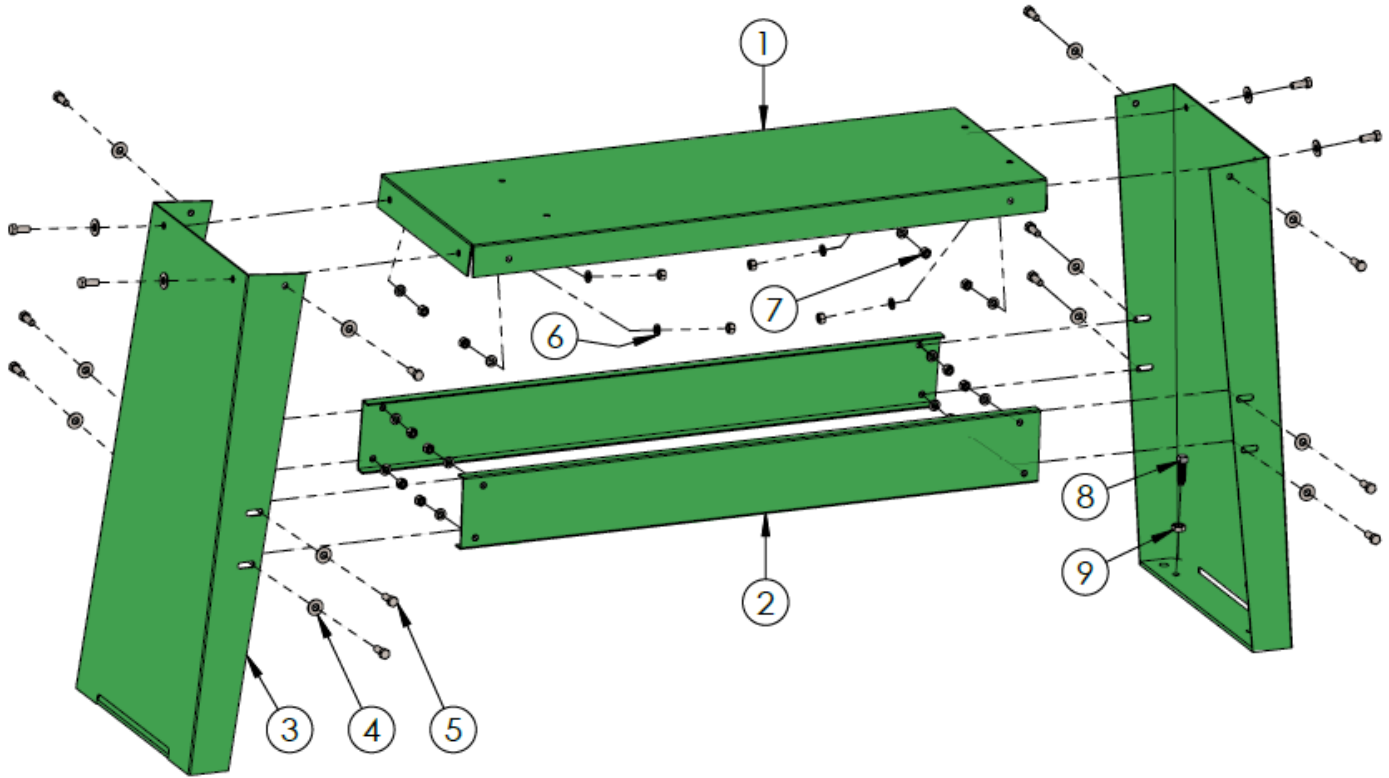
# Model SLE24-16 Parts View



NO.	PART NUMBER	DESCRIPTION	SAW MATERIAL	QTY.
1	SLE2416-101	SIDE PLATE	1 1/2" X 10 1/4" X 28 5/8" A36 HRS	1
2	SLE2416-102	KNIVES - UPPER AND LOWER	Ø4 1/8 (ie >Ø4.020) D2 TOOL STEEL X 7/8	2
3	SLE2416-103	PILLOW BLOCK - UPPER AND LOWER SHAFTS	Ø1 bore	6
4	SLE2416-105	TOP PLATE - ECO SLITTER	3/8 X 6 A36 HR X 27	1
5	SLE2416-106	BOTTOM PLATE - ECO SLITTER	3/8 X 12 A36 HR X 33	1
6	SLE2416-107	SHAFTS - UPPER AND LOWER KNIVES	ø1 C1045 CF TGP (BLUE) X 31 1/8	2
7	SLE2416-108	COLLAR - UPPER AND LOWER SHAFTS	G1SC-100-B, 1 piece clamping collar	9
8	SLE2416-109	BRACE - ECO SLITTER	3/4 X 4 A36 HRS X 10 1/8	1
9	SLE2416-110	SPROCKET - SHAFTS - ECON SLITTER	40BS14 Ø1" bore, 14 teeth	2
10	SLE2416-112	KEY - MOTOR	3/16 X 3/16 X 1 1/8 KEYSTOCK (does not come with motor)	1
11	SLE2416-114	GRIPS	Same handle as 22g and 16g brakes use	6
12	SLE2416-115	BACK STOP - BOTTOM HALF	12 Ga X 3 X 28 GALVANIZED	1
13	SLE2416-117	BACK GAUGE ROD MOUNT	1 X 2 A36 HRS X 2 1/16	4
14	SLE2416-118	KEY - KNIVES	1/4 X 1/4 X 1 3/8 KEYSTOCK	2
15	SLE2416-119	KEY - SHAFT SPROCKETS	1/4 X 1/4 X 15/16 KEYSTOCK	2
16	SLE2416-120	BACK GAUGE ROD	ø1 C1045 CF TGP (BLUE) x 41 1/8	2
17	SLE2416-121	BACK GAUGE BLOCKS	2 X 4 C1018 CR X 3	2
18	SLE2416-123	BACK GAUGE BAR	1/2 X 2 4140 HR X 28	1
19	SLE2416-124	MTG BRKT - CHAIN COVER	16 GA X 2 1/16 X 5 3/8 A1011 HRS	1
20	SLE2416-125	SCALE POINTER	16 Ga GALVANIZED x 2 1/2 x 4 3/32	1
21	SLE2416-126	SHEET SKID	16 Ga GALVANIZED x 6 1/4 x 21 1/2	1
22	SLE2416-127	SPROCKET - IDLER	40BS9, Ø5/8 Bore, 9 Teeth	1
23	SLE2416-128	BRASS BUSHING - IDLER	CB-0810-05, Ø1/2 X Ø5/8 X 5/8	1
24	SLE2416-129	BLANK COVER FOR TERMINAL BOX	4-3/16" High Blank Cover for Steel Switch Box	1
25	SLE2416-130	Terminal Box	Steel Terminal Box with 10 Knockouts	1
26	SLE2416-131	SHOULDER BOLT - CHAIN IDLER	Ø1/2 X 2 shoulder X 3/8-16 X 5/8	1
27	SLE2416-132CHAINPATH	CHAIN	ANSI 40 roller chain X 31 1/2 inches	1

<p><b>PROPRIETARY AND CONFIDENTIAL</b> THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF TENNSMITH, INC.. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF TENNSMITH, INC. IS PROHIBITED.</p>	QTY PER MACHINE	1	<p>DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL: ± 1/32 ANGULAR: MACH ± 1° BEND ± 2° ONE PLACE DECIMAL ± .03 TWO PLACE DECIMAL ± .015 THREE PLACE DECIMAL ± .005</p>	NAME	DATE	<p><b>Tennsmith</b>  SLITTER - ECON VERSION</p>	
				DRAWN	EW		9/10/2020
				CHECKED			
				ENG APPR.			
				MFG APPR.			
		SAW MATERIAL	N/A	Q.A.			
		CLEANUP	N/A	COMMENTS:			
	NEXT ASSY	USED ON		Assembly: Be sure the key for the knives has 1/16 clearance with the collars on the knife side and on the stopper side, so can adjust the upper knife blade gap either way.		REV.	
	APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:16		WEIGHT:	
						SIZE DWG. NO. <b>A SLE2416-assembly-mfg1</b>	
						SHEET 2 OF 6	

## Optional Stand for the SLE24-16



NO.	PART NUMBER	DESCRIPTION	Saw Material	QTY.
1	ESL2416-151	TOP - PORTABLE STAND	12 GAUGE X 17 3/8 X 43 23/32 A1011 HRS	1
2	ESL2416-153	BRACE - PORTABLE STAND	12 GAUGE X 5 29/32 X 39 15/16 A1011 HRS	2
3	ESL2416-152	LEG - PORTABLE STAND	12 GAUGE X 21 21/32 X 32 11/16 A1011 HRS	2
4	Preferred Wide FW 0.375			16
5	HBOLT 0.3750- 16x1x1-N			16
6	Regular LW 0.375			16
7	HNUT 0.3750-16-D-N			16
8	ESL2416-160		1/2-13 x 1 1/2 Square head with 1/2 dog	4
9	HJNUT 0.5000-13-D- N			4

## **FOREWORD**

This manual has been prepared for the owner and operators of the TENNSMITH Model SLE24-16 slitter.

Its purpose, aside from operation instruction, is to promote safety through the use of accepted operating procedures. Read all instructions thoroughly before operating your shear.

Also contained in this manual is the parts list for your shear. It is recommended that only TENNSMITH factory authorized parts be used for replacement parts.

### **3-YEAR LIMITED WARRANTY**

TENNSMITH machinery and component parts are carefully inspected at various stages of production and are tested and inspected prior to shipment. We agree that for a period of twelve (12) months from the date of delivery from our authorized distributor to replace, at our option, any machine (or component part thereof) proving defective within the above period. Additionally, we agree that for a period of thirty-six (36) months from date of delivery to replace component parts proving defective within the stated period. All warranty claims are made F.O.B. our plant, providing such machine (or component part) is returned freight prepaid to our plant, or a designated service center of the undersigned, for our examination. This warranty does not include repair or replacement required because of misuse, abuse, or because of normal wear and tear; or electrical components which are warranty by their manufacturer. Further, we cannot be responsible for the cost of repairs made or attempted outside our factory or designated service center without our authorization. No claims for defects will be honored if the name and data plate has been removed. This warranty is made expressly in place of all other warranties or guarantees expressed or implied, with respect to fitness, merchantability, quality or operational ness. This warranty becomes effective only when the accompanying warranty card is fully and properly filled out and returned to the factory within ten (10) days from the date of delivery.

## SAFETY INSTRUCTIONS

1. Know the safety and operating instructions contained in this manual prior to operation of this shear. Become familiar with and understand the hazards and limitations of this shear. Always practice safety.
2. Wear approved eye safety protection, such as safety glasses or goggles, etc., when operating the shear to protect your eyes.
3. Protective type footwear should be worn, and jewelry such as rings, watches, necklaces, etc., should be removed prior to operation of this shear.
4. **Do not remove the front guards (Index # 31 and # 32). These are protective devices. If the guards are damaged or removed, immediately stop using the machine, and contact Tennsmith or your authorized distributor for a replacement part.**
5. Always keep hands clear of the rotating blades.
6. Should the machine become jammed, do not insert hand in to the point of operation to remove material until the following is completed:
  - Shut off the machine.
  - Disconnect from power source (unplug)
  - Alert a supervisor of the issue.
7. Do not misuse the slitter by using it for other than its intended purpose.
8. Never exceed the rated capacity of this machine.
9. Keep the work area clear and clean to avoid tripping or slipping.
10. Any malfunction or abnormality pertaining to this machine should be reported to the maintenance supervisor immediately.
11. When not in use make sure the power is off and the machine is unplugged.

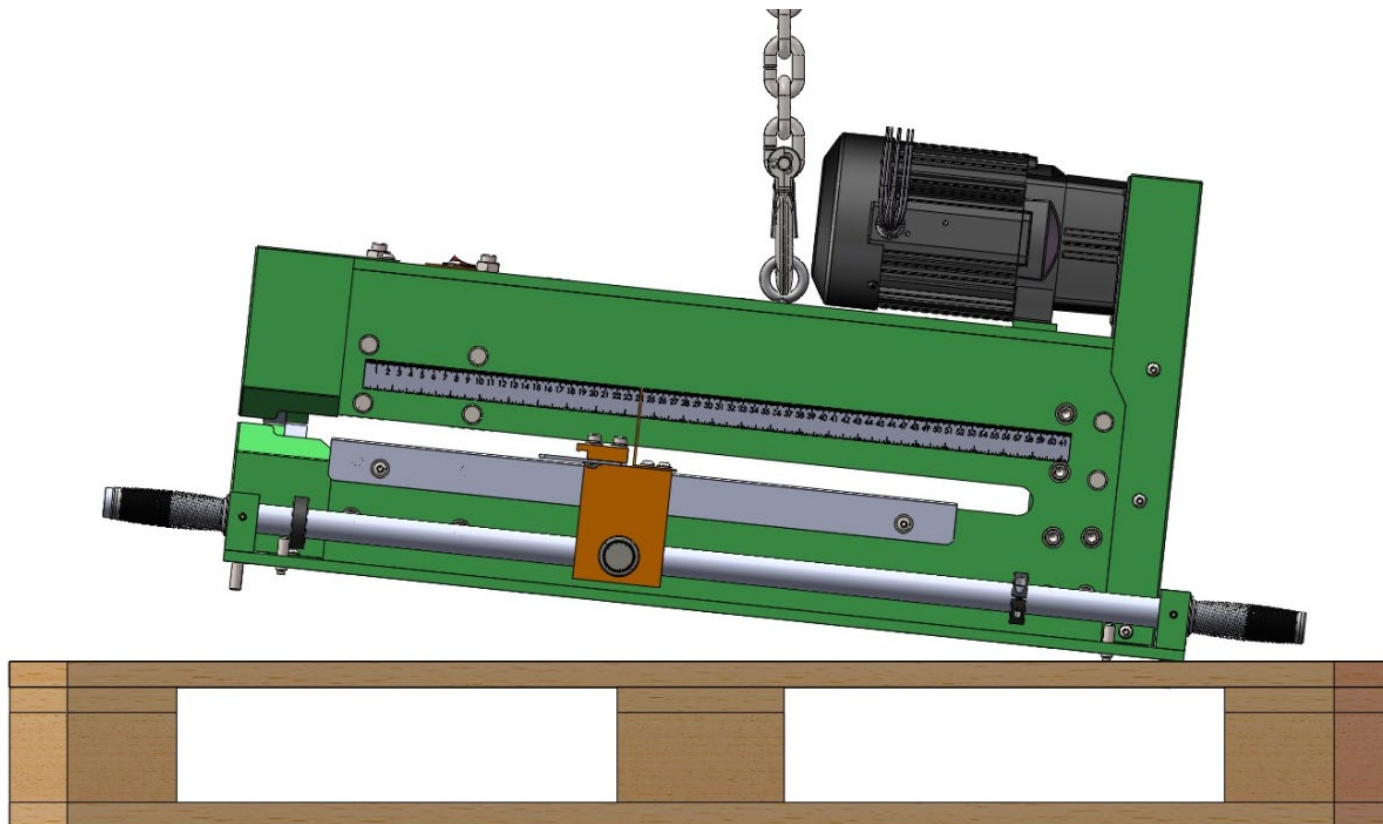


## RECEIVING THE SLITTER

Examine the slitter and accessories package for evidence of any possible damage sustained during transit. Any damage should be reported to your distributor immediately.

## INSTALLING THE SLITTER

Carefully remove the slitter from the shipping pallet.



Locate the slitter in a well-lighted area on a solid level floor. Use bolts or similar holding devices through the mounting holes, located on the bottom plate of the machine.

Place an accurate machinist level on the top of machine and check the level of the machine in both directions. Use the leveling screws on the mounting surface to adjust the level. After the machine is level, tighten the mounting bolts.

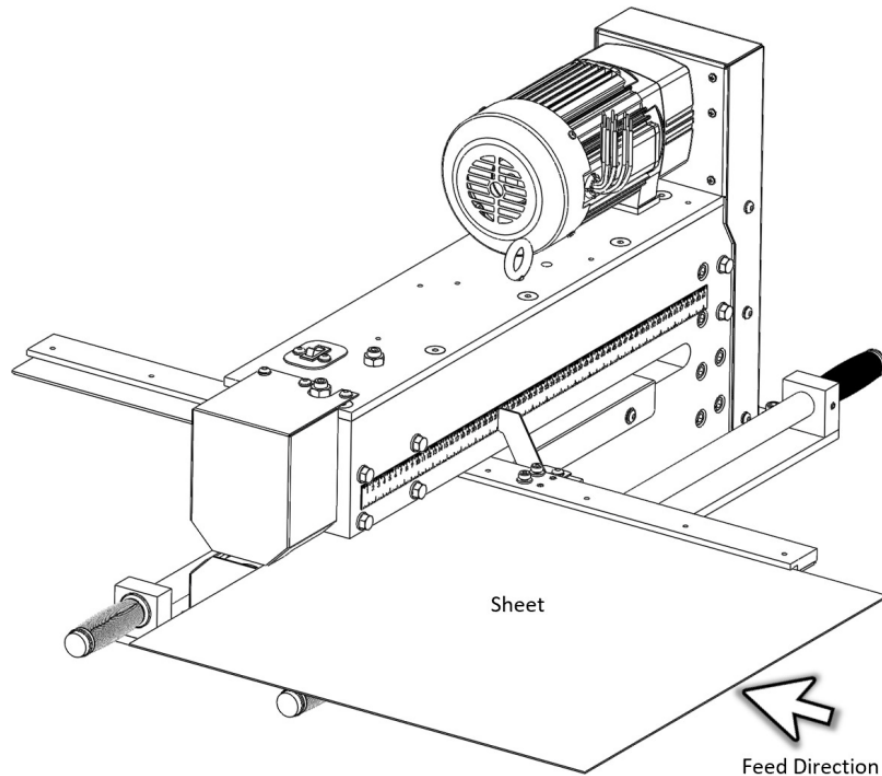
**Periodically, recheck the unit for levelness.**

**NOTE: Proper levelness greatly affects the performance of your slitter, it is very important to ensure your machine is level prior to operation.**

## OPERATION INSTRUCTIONS

The mild steel capacity of the Model SLE24-16 is 16 gauge. Included in the manual is a standard shearing, bending, and forming conversion chart for various materials including Aluminum, Stainless, and Plastics. If you have any capacity related questions on materials that do not appear on the chart, please contact Tennsmith technical support to help determine the exact capacity ratings.

**NEVER ATTEMPT TO CUT ANY MATERIAL GREATER THAN THE MAXIMUM RATING FOR YOUR SLITTER. Never attempt to slit any material which would be less than a 1".**



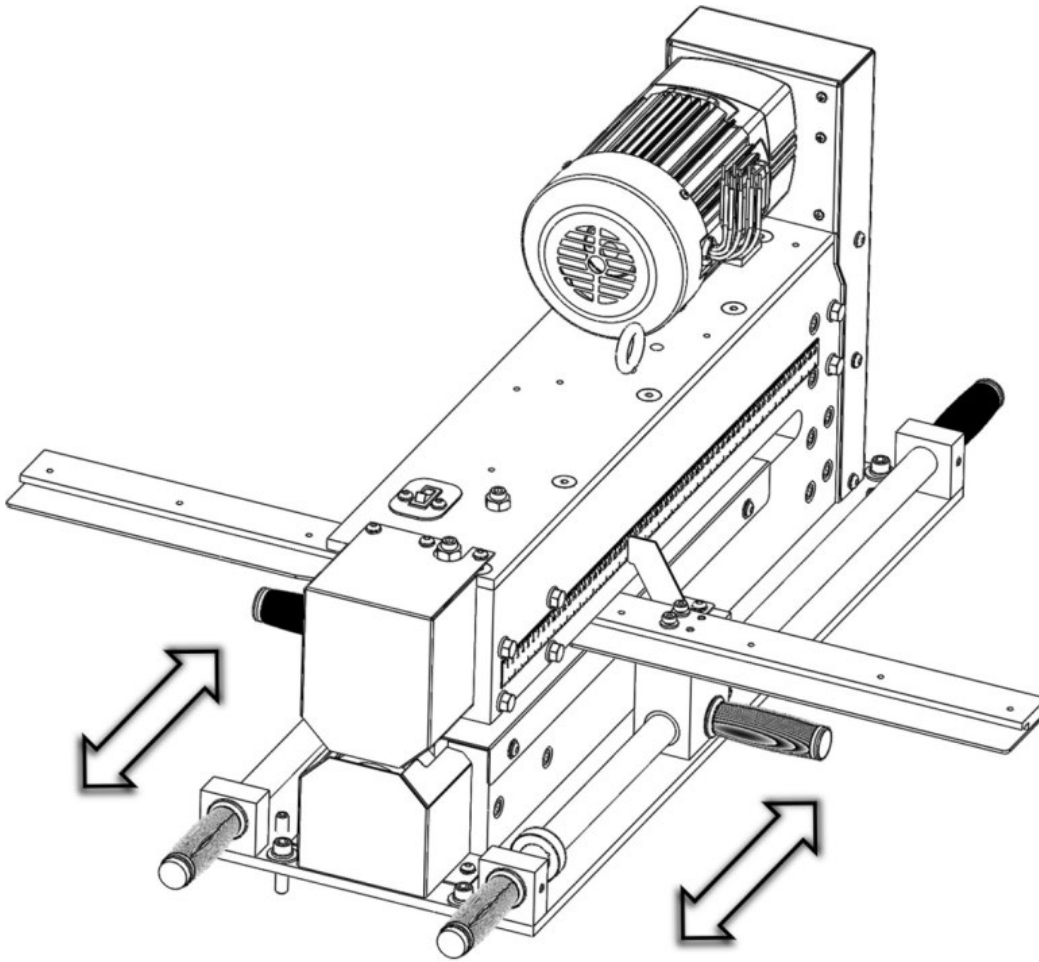
Plug the slitter into a 110v outlet. Flip the red toggle switch which will illuminate when activated. Note the turning of the blades. The blades should be rotating in a clockwise direction. The SLE24-16 is designed to be fed from the right-hand side of the machine with the slit material exiting from the left as the operator stands facing the front of the machine.

Position the material into the gauge as the above figure shows. Guide the material firmly against the back gauge on the right side of the machine. The slit material will exit the left side of the machine.

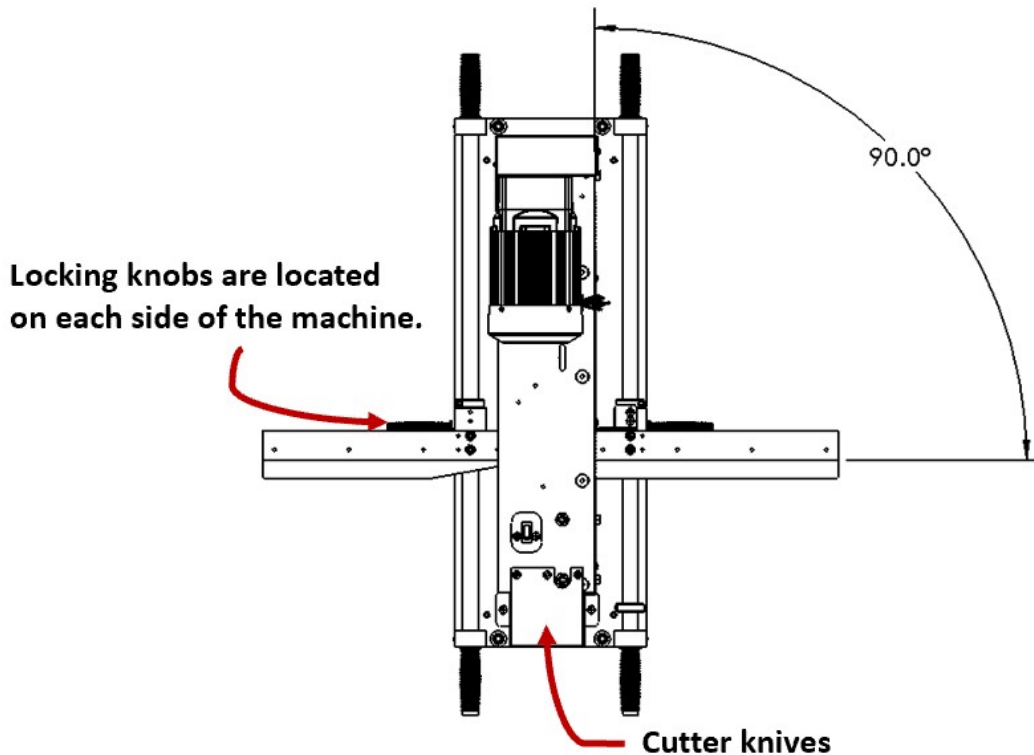
**Keep hands and clothing clear of open side of the machine and rotating shaft on the exit side.**

Upon initial operation of machine to check width and squareness accuracy by running some test strips (2" - 3" wide). If width is not as set using gauge pointer, pointer may need to be repositioned to correct. If parts are tapered, gauge squareness may not be correct (refer to set-up procedure for gauge squareness).





The back gauge is moved into position by the two locking knobs as pointed out above. The handles are threaded right the other left for easy twist to open and lock the back stop and provides a stable movement of the gauge.

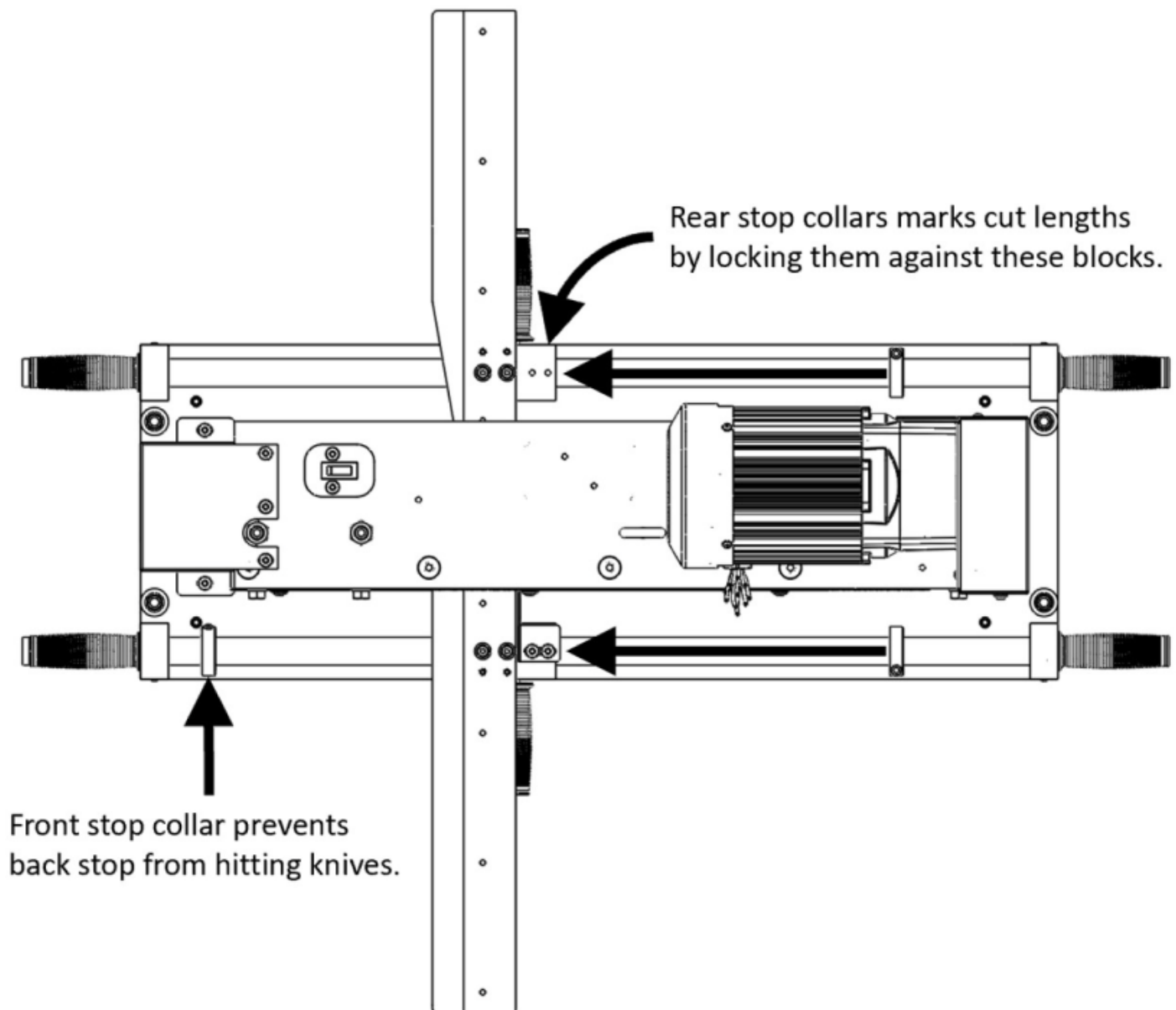


**CAUTION: THIS SLITTER SHOULD NOT BE OPERATED WITHOUT THE GUARDS IN PLACE AND PROPERLY ALIGNED. (Index # 31 and # 32).**



	<p> <b>WARNING</b></p> <p><b>Rotating blades can cause severe injury.</b></p> <p><b>Keep hands and loose clothing away.</b></p> <p><b>Keep machine guards in place.</b></p>
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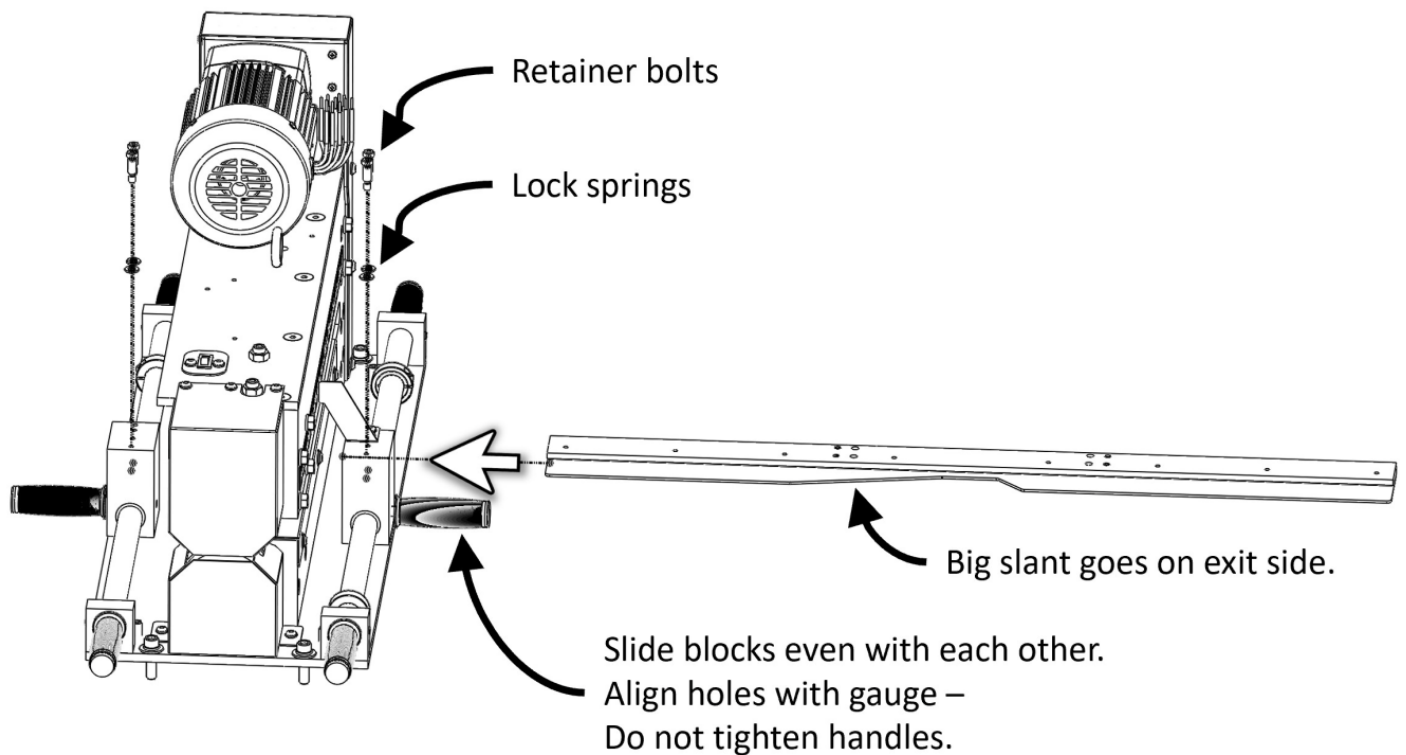
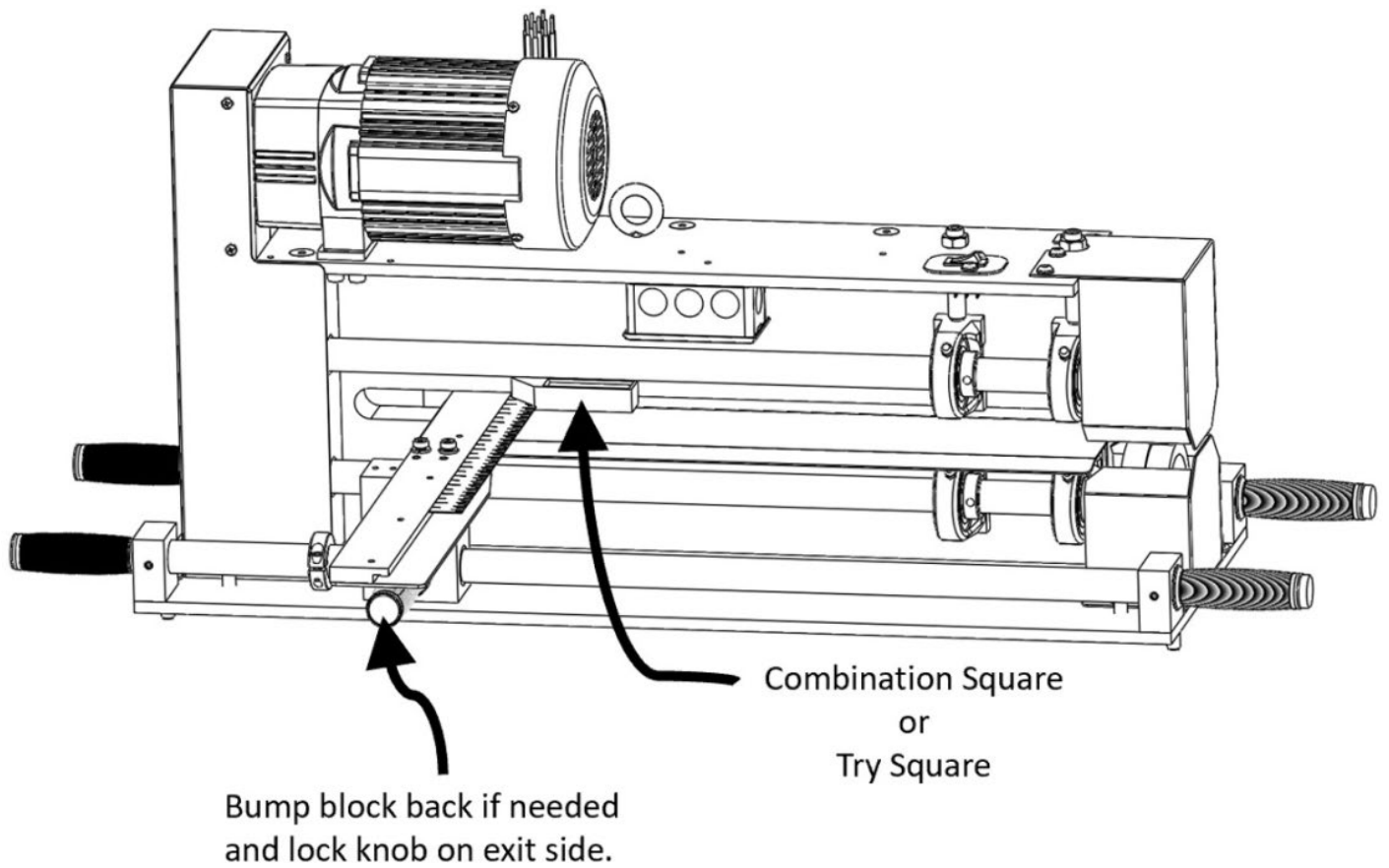
## BACK GAUGE ADJUSTMENT



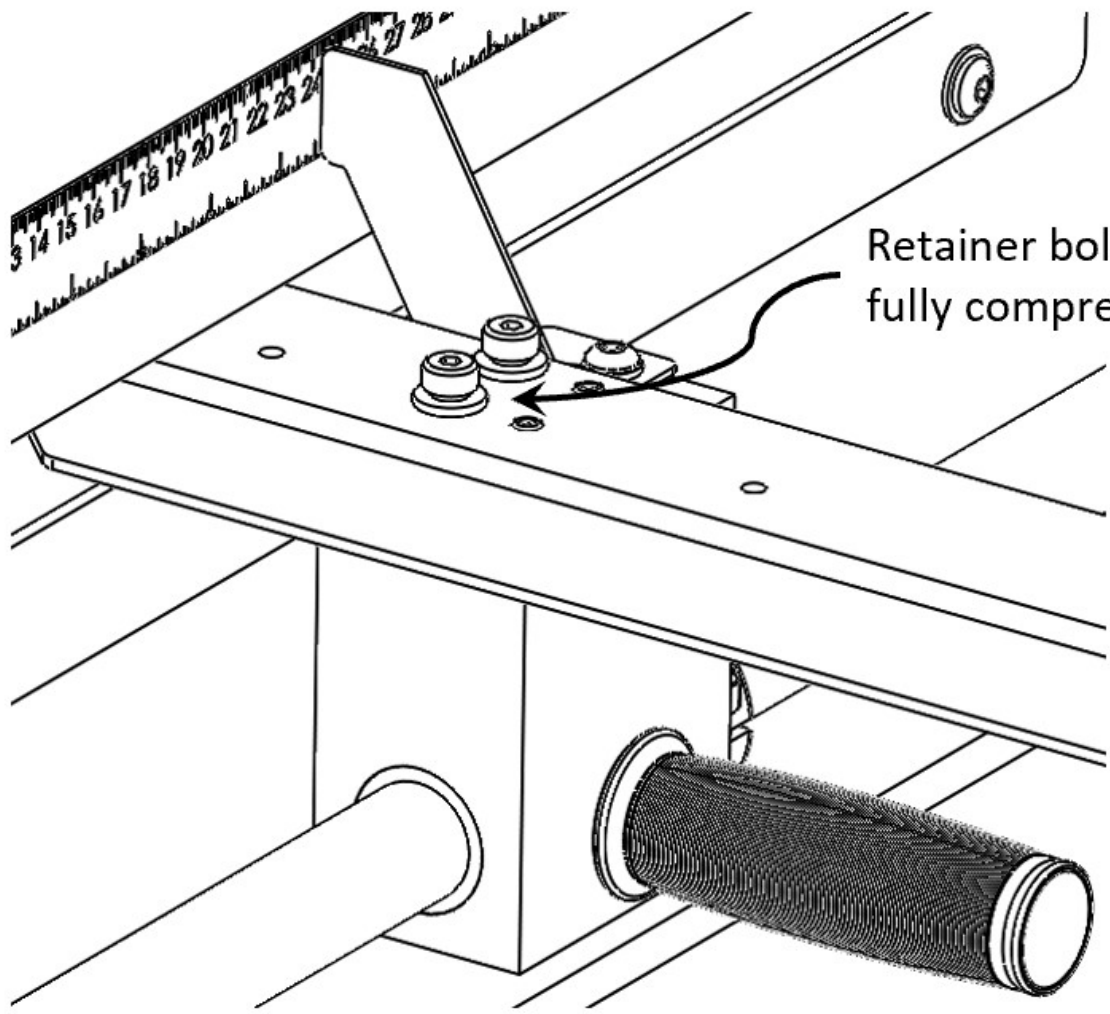
Upon initial operation of the machine to check width and squareness accuracy by running some test strips (2" - 3" wide). If width is not as set using gauge pointer, pointer may need to be repositioned to correct. If parts are tapered, gauge squareness may not be correct (refer to set-up procedure for gauge squareness).

**To square a misaligned back gauge, follow the procedure:**

Stop collars (**Index #7**) used to position the back gauge slide blocks are factory set so that each time the gauge is removed and re-installed the square between the gauge and knives will be correct. If gauge is not square, tapered strips will result. If stop collars should come loose or sheet metal portion of gauge be replaced, it will be necessary to re-set squareness by the method used at the factory. See the following Illustration.



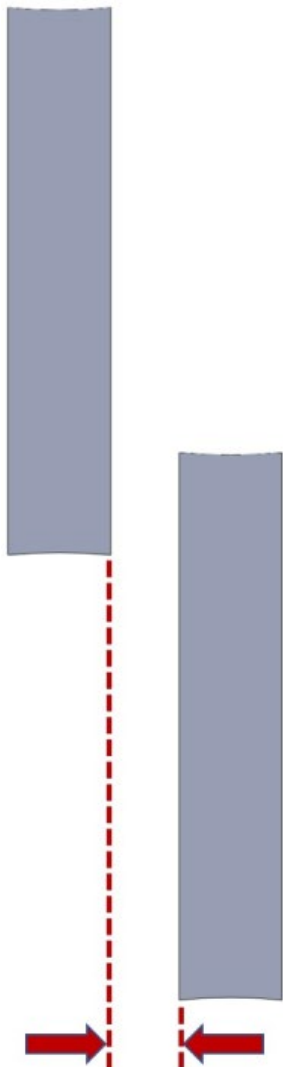
Upon initial operation of the machine, check width and squareness accuracy by running some test strips (2" - 3" wide). If width is not set using gauge pointer, pointer may need to be repositioned to correct. If parts are tapered, gauge squareness may not be correct (refer to set-up procedure for gauge squareness).



Retainer bolts: should not fully compress lock spring.

## BLADE ADJUSTMENT

The factory setting for the gap between the upper and lower blade is .0005. This setting was achieved using a piece of shim stock. However, if this is unavailable, the thickness of newsprint will approximate this dimension. The factory setting is the optimal clearance for the entire range of material likely to be sheared on this machine. Different materials and thickness may require a larger or slightly smaller clearance. If you have any specific questions regarding optimal blade gap, please consult Tennsmith.



**Factory Knife Clearance is set at ( $\pm$  .0005")**

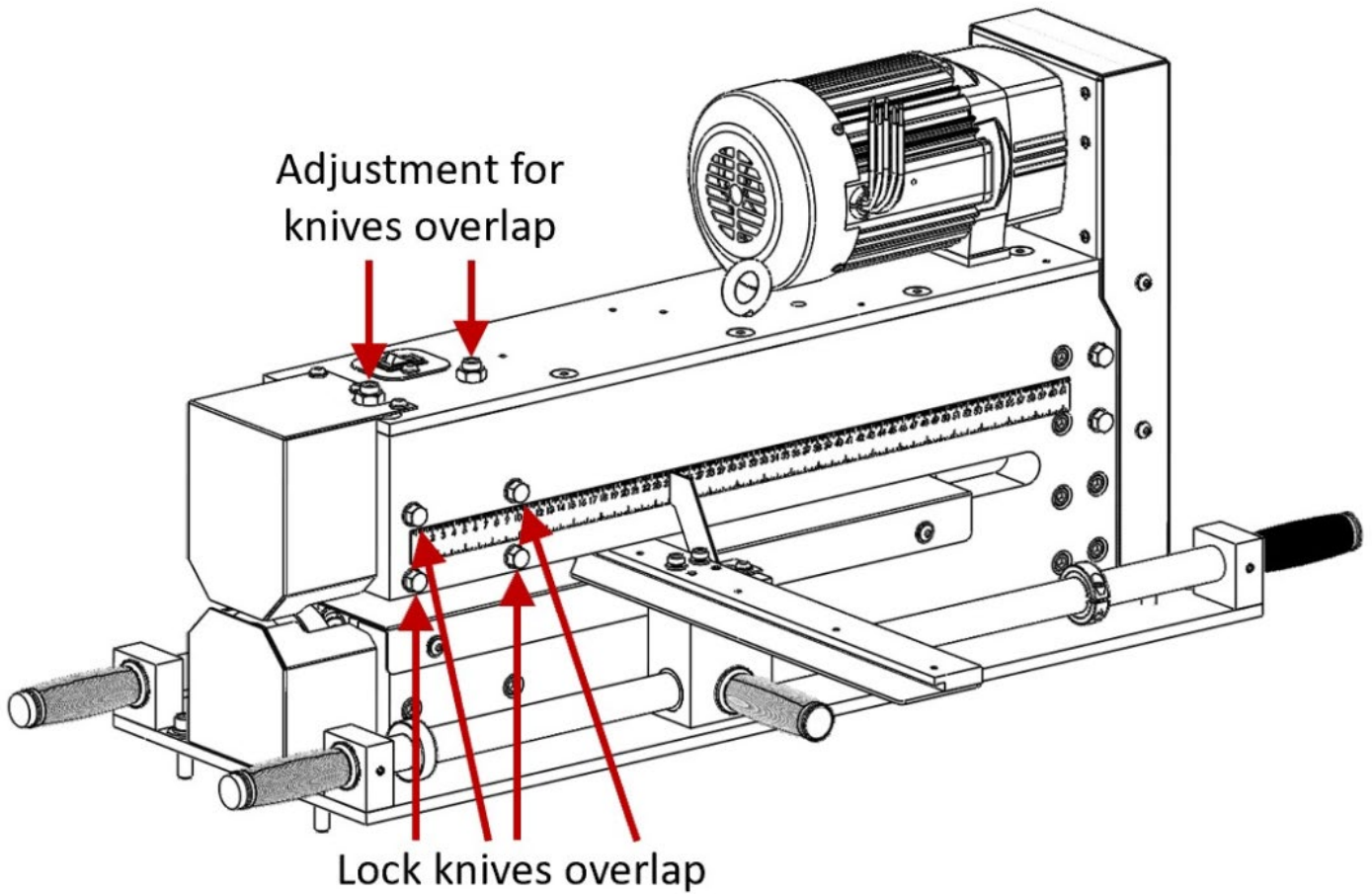
This allows for slitting a wide range of materials, but may not be best for exclusive use on 18 to 16 gauge materials.

### **Material Thickness**

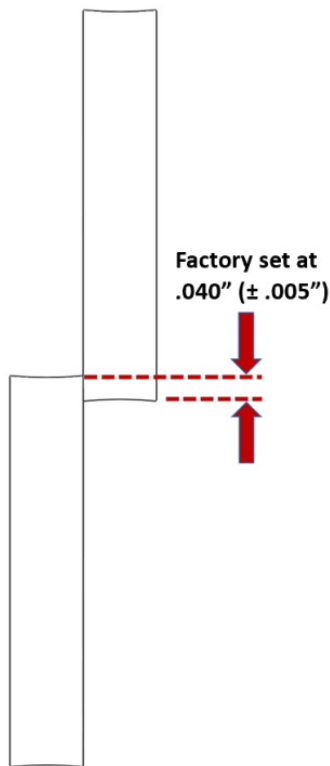
0.006" and less  
0.006" – 0.010"  
0.010" – 0.018"  
0.020" – 0.0625

### **Blade Gap**

NO CLEARANCE  
0.0005" to 0.00075"  
0.00075 to 0.001"  
10% of Material Thickness



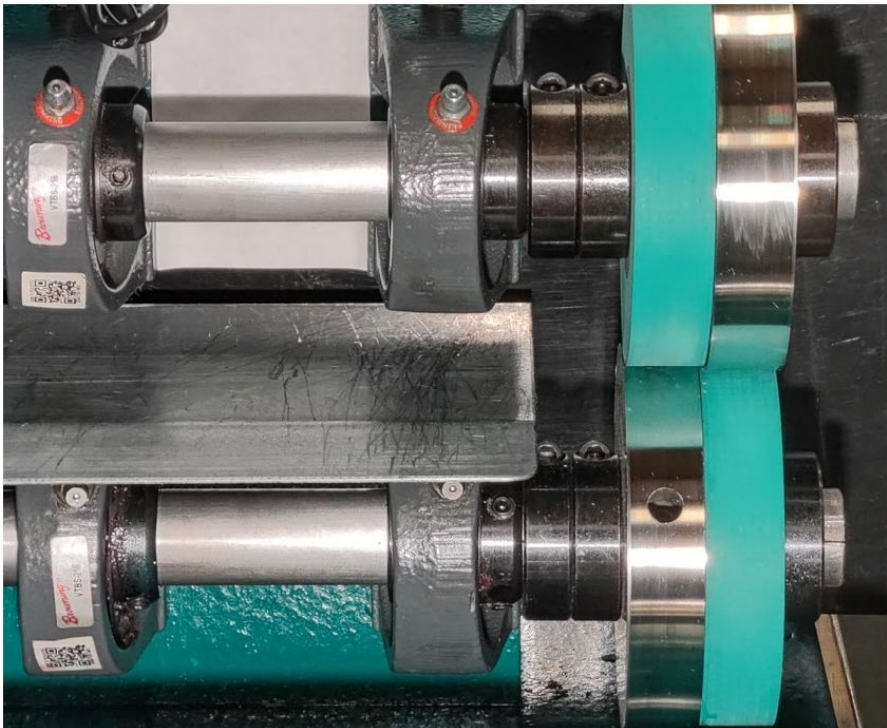
Upper and Lower Blade overlap is set at the Factory 0.040" which will cut material up to 20 gauge mild steel (0.038" materials). See the following Illustration.



To cut heavier materials (18 gauge to 16 gauge) the knife overlap must be increased to 0.070". Call Tennsmith Tech support for more information regarding material settings.

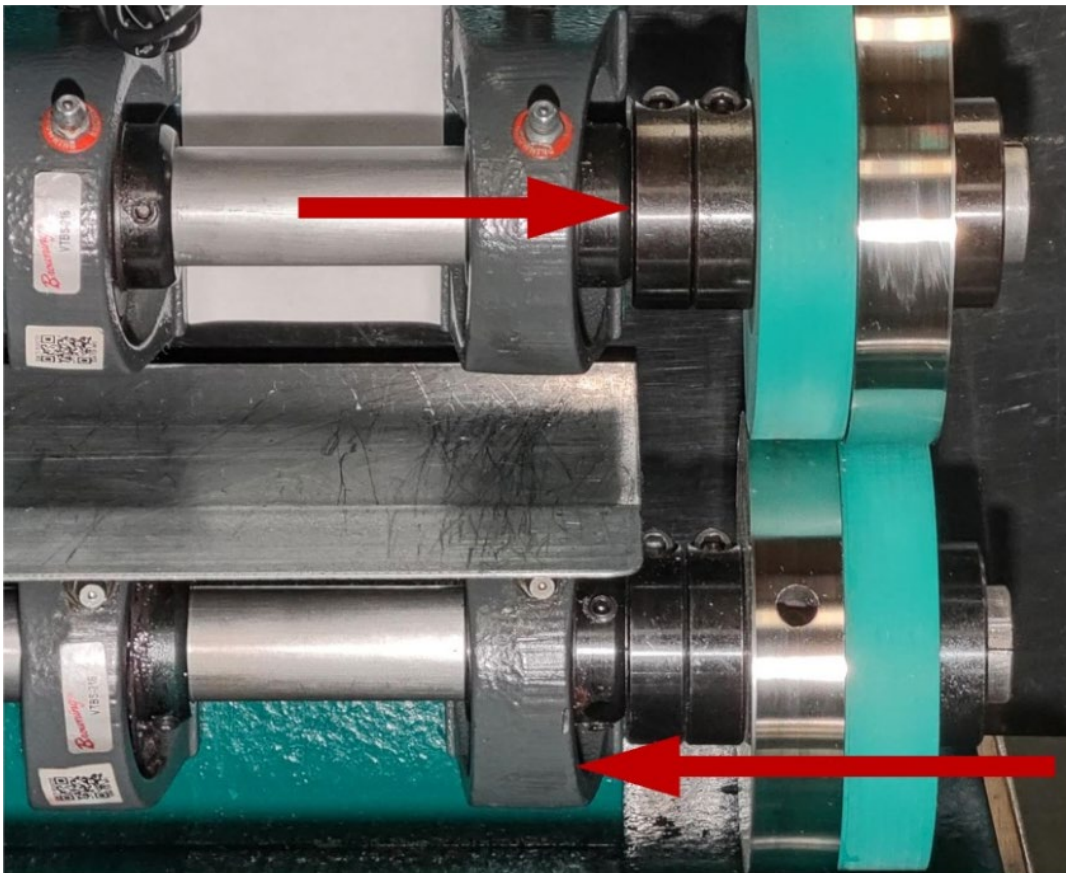
## Removing or Replacing of Knives

1. Remove top and bottom cutter guards.
2. Jog machine around so that screws in retainer rings and knives are accessible with an Allen-wrench as shown in picture. Unplug machine. Loosen locking screws in retainer rings and setscrews in knives.
3. Remove outside retainer rings and lower stripper ring. Slide inside retainers and lower stripper ring back against the bearing housing.
4. Rotate knives to the position shown below and remove.



5. Resharpen knives detailed in this manual (page #19) be careful to maintain the cutting face at 90° to the bore. (Reference to knife sharpening instructions or send the blades back to factory for re-sharpening)
6. Reassemble unit by reversing above procedures.





Put two collars, knife, stripper ring, and then another collar on lower arbor. Push assembly tight toward the bearing and lock in place.

On the upper arbor, install clamp, stripper, knife, and then last collar. Set your knife side clearance and lock the knife. Bring your outer collar next to the knife and tighten it. Now push the inner collar and the stripper toward the knife and lock.

7. Without bringing knife faces into contact with each other, tighten and loosen the knife set screws two or three times to "seat" on the keys.
8. Set gauge pointer to a random length (4" or so) and tighten locking knobs to hold in place. Using a small scale to measure from the inside of the gauge slot to the cutting face of the knife, set the lower knife to the distance indicated by the gauge pointer. Tighten setscrew (use rotational force only, do not pull Allen wrench to side while tightening or knife may cock).
9. Insert 0.001' feeler gauge between upper and lower knife faces and gently slide upper knife into place (do not force or knife may cock). Using slow

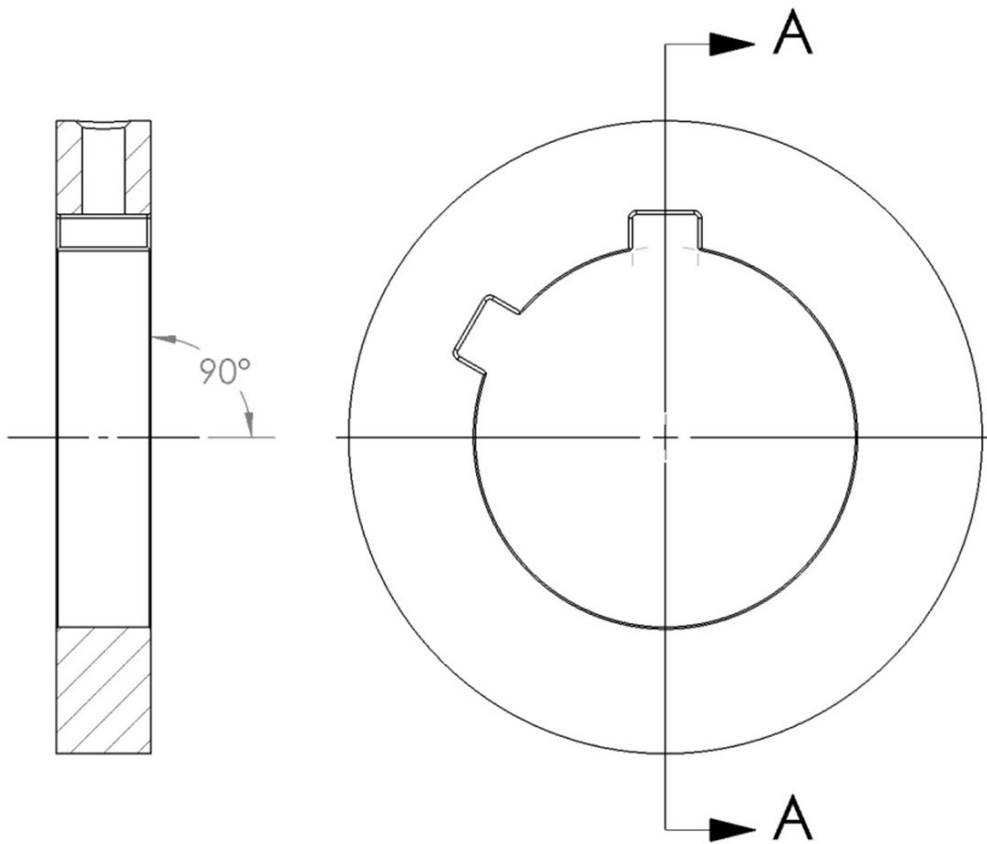
gradual torque, partially tighten the setscrew in the upper knife being careful not to exert any side to side force on the wrench do not fully tighten screw.

Remove wrench and feeler gauge.

10. Plug the machine in and turn the power on. Watch clearance between knives as they rotate. If knives are running true, the gap will remain the same. If gap opens and closes (knife appears to wobble) then one or both knives are cocked and will have to be reset if gap is correct then fully tighten upper knife setscrew and double check to make sure knives are still running true. If correct , jog machine around so that setscrews are accessible and unplug machine.
11. Push upper and lower stripper rings and retainers up against the sides of the knives and rotate so that locking screws are accessible. Hold retainers against knives and stripper rings. (Blade setup should now appear as shown in figure above.)
12. **MAKE SURE ALL GUARDING IS IN PLACE BEFORE CONNECTING POWER**

## SHARPENING BLADES

Your TENNSMITH slitter features precision ground blades. The blades have two cutting edges. The blades can be turned over to expose the new cutting edge. It can be sharpened on a surface grinder by grinding both wide sides to the blade. (See Figure 2). Blade sharpening service is available from the factory.



The knife sharpening by grinding the side faces.

**DO NOT GRIND OUTSIDE DIAMETER.**

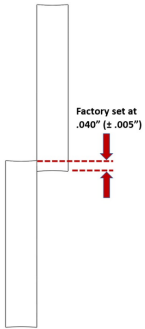
The squareness of bore to side face must be maintained. (90°)

# Trouble Shooting

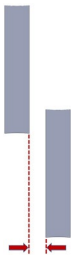
## MATERIAL NOT SLIT THROUGH

Material thickness or tensile strength exceeded the capacity of machine. 16 Ga. (0.062") is the maximum thickness & 50,000 psi is the maximum shear strength.

Knives overlap is not enough



Blade Gap clearance is too great



### Factory Blade Gap Clearance is set at (± .0005")

This allows for slitting a wide range of materials, but may not be best for exclusive use on 18 to 16 gauge materials.

### Material Thickness

0.006" and less  
0.006" – 0.010"  
0.010" – 0.018"  
0.020" – 0.0625

### Blade Gap

NO CLEARANCE  
0.0005" to 0.00075"  
0.00075 to 0.001"  
10% of Material Thickness

An arbor bearing may be loose, or the bearing pins removed from the housing.

## BURRED EDGE

Blade clearance is too much

Chipped knife (burr will be random along edge and occur at approx. 12½" intervals)

Dull knife

Soft material

Buildup of material on knife edge

## **ROLLED EDGE**

Dull knives

Excessive penetration of cutters (Note, penetration & side clearance of cutters is factory set to attain satisfactory results. Cutting material ranging from 30 ga. to 16 ga. a certain amount of rolled edge must be expected when slitting light gauge material)

## **TAPERED STRIPPED**

Gauge positioning out of square (refer to setup instructions)

Material not being held into gauge. (Refer to operating instructions under sheet guide

Build up on gauge

## **MATERIAL "HANGS-UP" IN THE MACHINE**

Ragged edge on material getting trapped in gauge

Back gauge out of adjustment.

## **MACHINE STALLING**

Capacity Exceeded

Improper Blade settings

Motor Defective

## **EXCESSIVE DRIVE TRAIN NOISE**

Chain loose. Adjust tension with take-up assembly; remove link from chain if take-up does not provide enough adjustment.

Gears worn in motor gearhead (refer to manufacturer's instructions).

Defective idler bearing on chain wrap.

Defective shaft bearing.

**NOTE:** Gearhead motors are normally noisy. If the motor is quiet when slitting material, the motor is ok.

## MAINTENANCE

To maintain the SLE24-16 Slitter the following items should be checked on a regular basis.

1. The arbors, knives, gauge bar, guide rods and skid table should be wiped down and lubricated with a light oil such as WD-40. This will help prevent rust and remove debris from the slitter. They should be re-lubricated on a regular basis. This re-lube period should be more often if the slitter is operated in extremely dusty environments.
2. The guard on the drive side of the slitter incorporates the main arbor bearings and provides access to the chain and gears. Use a heavy-duty chain lube to lubricate the chain and gears before replacing the guard. Keep the drive chain clean and well lubricated. Check the chain tension regularly.
3. Keep all fasteners tight and check that all guards are in place.
4. Lightly lubricate gauge rods regularly to maintain smooth movement as well as keep them clean.
5. Keep all unpainted surfaces lightly oiled to prevent rust.



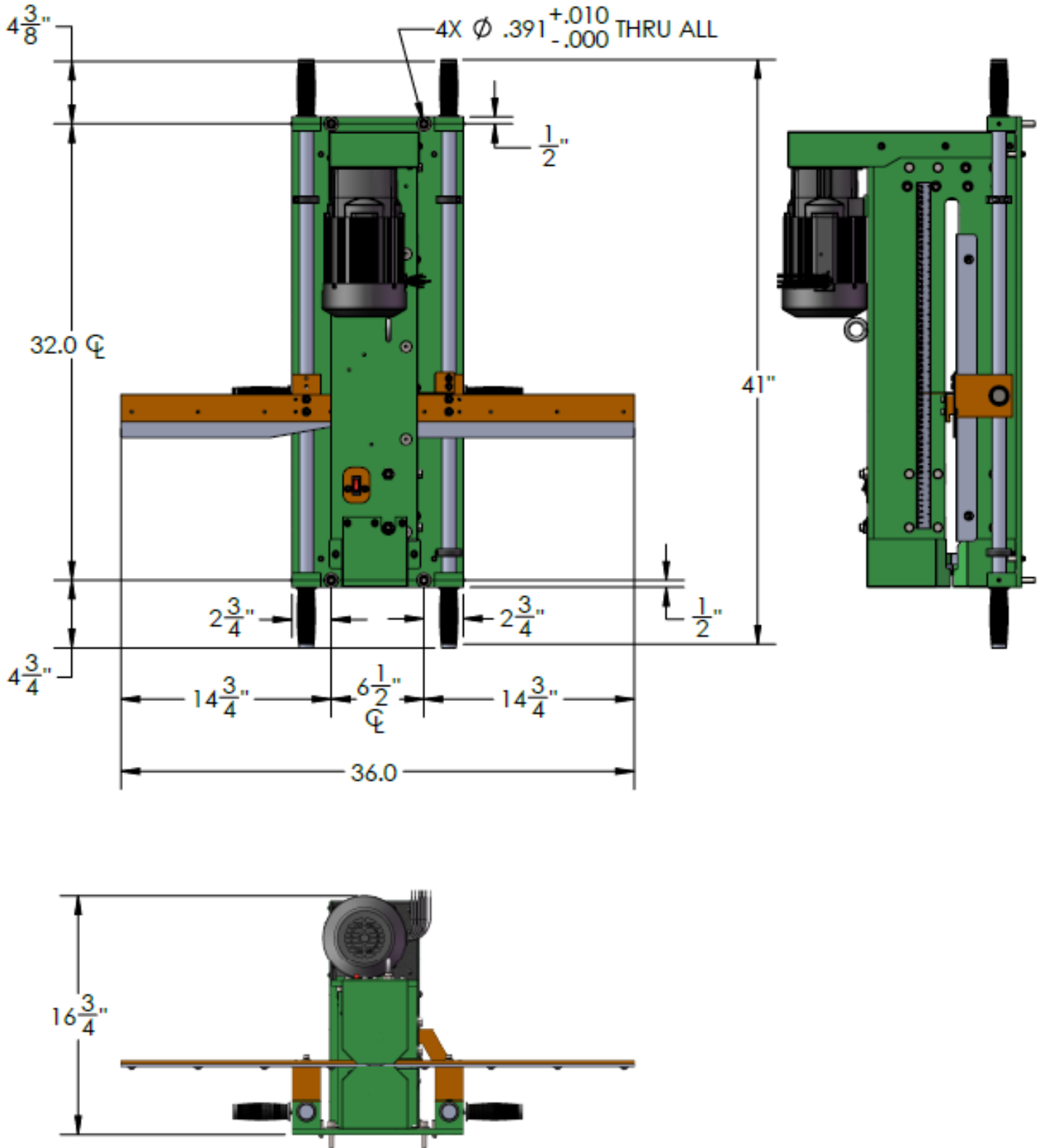
SLE24-16 SINGLE WHEEL SLITTER	SLE24-16
Maximum Shearing Capacity, Mild Steel Mild Steel Rated Materials at 80,000 Tensile / 44,000 Yield	16 gauge / 1,5mm
Maximum Shearing Capacity, Stainless Steel Stainless Shear Rated Materials at 90,000 Tensile / 55,000 Yield	22 gauge / 0,75mm
Maximum Slitting Length	none
Maximum Slitting Width	24 in / 609.6mm
Motor-110v, gear motor	1/3 hp.
Shipping Weight (machine only)	350 lbs.
Shipping Weight (optional machine stand only)	50 lbs.

**APPROXIMATE SHEARING, BENDING AND FORMING  
CAPCITIES FOR VARIOUS MATERIALS COMPARED TO MILD STEEL**

Mild Steel Capacity	20ga.	18ga.	16ga.	Mild Steel Capacity	20ga.	18ga.	16ga.
<b>NON-FERROUS METALS</b>				<b>FERROUS METALS</b>			
Aluminum				Iron-dead soft	20ga.	18ga.	16ga.
1100-0, 2024-0	.070	.090	.125	Steel low carbon			
5052-0, 6061-T4	.070	.090	.125	1074, 1095 C.R. Spring Steel	24ga.	22ga.	20ga.
2024-T3, 5052-H34	.048	.063	.090	Hot Rolled	20ga.	18ga.	16ga.
5086-H36, 6061-T6	.048	.063	.090	Low carbon Cold Rolled	20ga.	18ga.	16ga.
Copper and Alloys				Stainless Steel Annealed	24ga.	22ga.	20ga.
Electrolytic Copper	18ga.	16ga.	14ga.	<b>OTHER MATERIALS</b>			
Bronze Commercial	18ga.	16ga.	14ga.	Plastics			
Brass 70-30	18ga.	16ga.	14ga.	ABS Compounds	.120	.150	.200
Nickel Alloys				Polycarbonate	.075	.105	.125
Inconel 600	24ga.	22ga.	20ga.	Printed Circuit Boards			
Monel R405	24ga.	22ga.	20ga.	Copper-Clad			
Nickel 200A Annealed	24ga.	22ga.	20ga.	Epoxy Laminate	.086	.115	.150
Zinc as Rolled	20ga.	18ga.	16ga.				

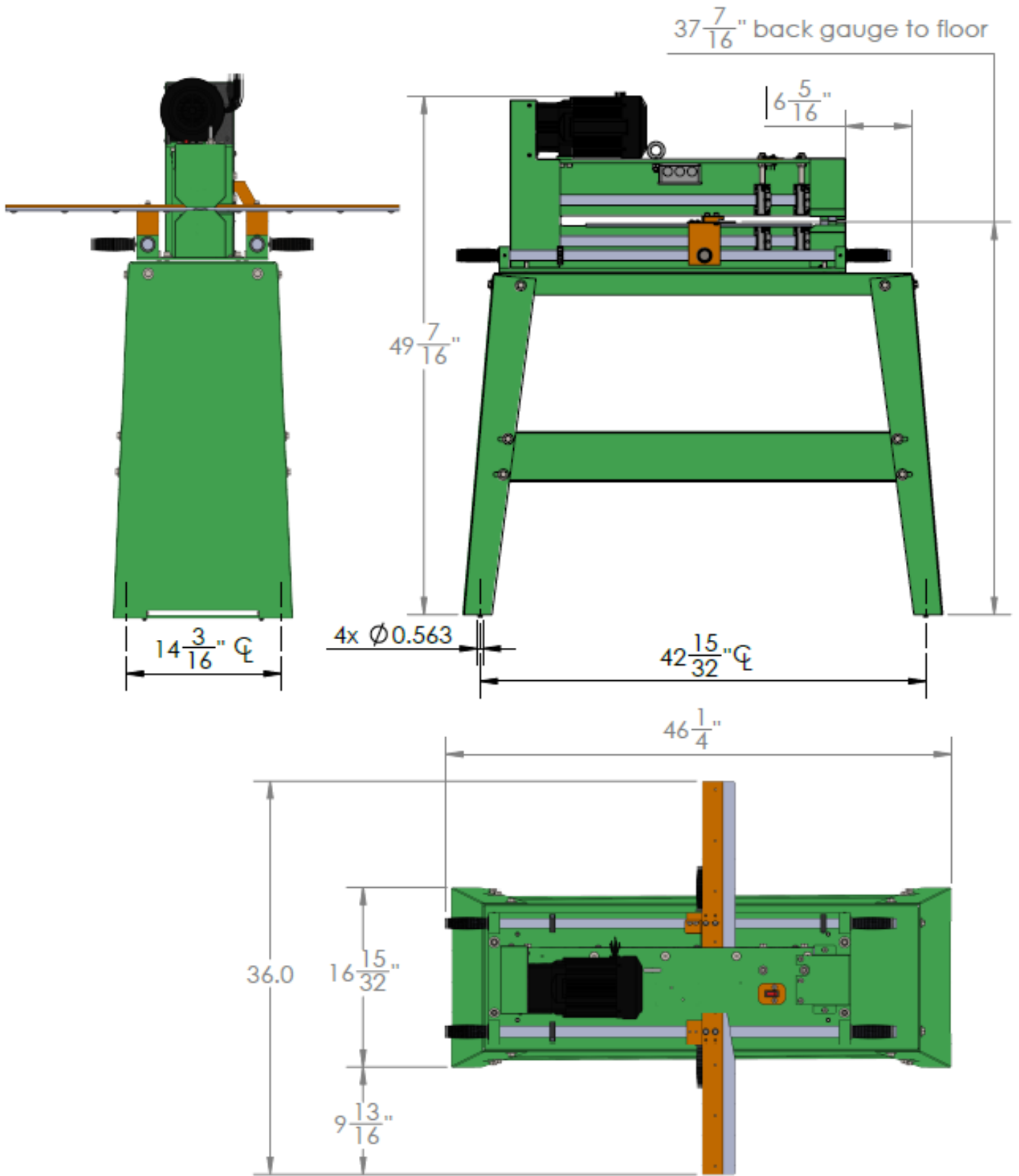
	Approximate Gauge Equivalentents										
<b>Gauge</b>	<b>28</b>	<b>26</b>	<b>24</b>	<b>22</b>	<b>20</b>	<b>18</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>10</b>
<b>Inches</b>	<b>.015</b>	<b>.018</b>	<b>.024</b>	<b>.030</b>	<b>.036</b>	<b>.048</b>	<b>.060</b>	<b>.075</b>	<b>.105</b>	<b>.120</b>	<b>.135</b>
<b>Millimeters</b>	<b>.38</b>	<b>.46</b>	<b>.61</b>	<b>.76</b>	<b>1.00</b>	<b>1.25</b>	<b>1.60</b>	<b>2.00</b>	<b>2.70</b>	<b>3.05</b>	<b>3.50</b>

# MACHINE DIMENISONS





# MACHINE DIMENSIONS



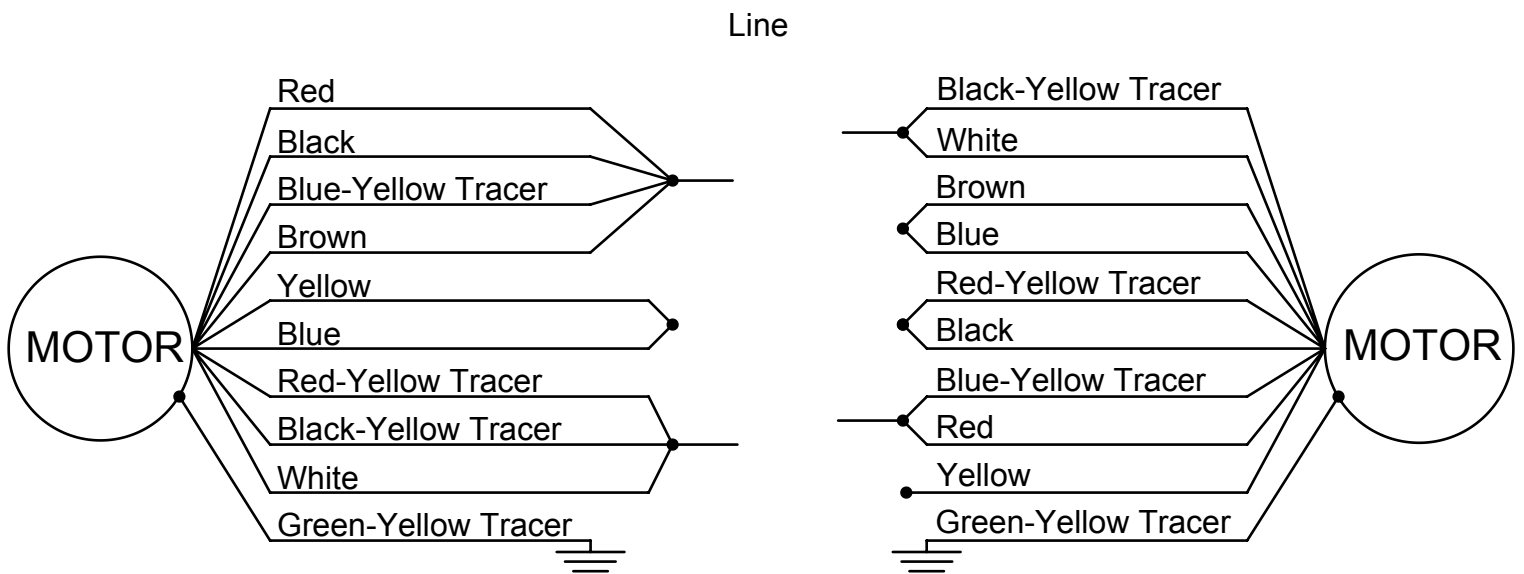


# CONNECTION DIAGRAM 07410299

## 9-Wire Dual-Voltage Reversible

### Low Voltage

### High Voltage



### Direction of Rotation: Clockwise

Low Voltage:  
To reverse direction, Transpose  
Blue-Yellow Tracer and Brown with White .

High Voltage:  
To reverse direction, Transpose  
Blue-Yellow Tracer with White .

### BODINE LIMITED WARRANTY

The Bodine Electric Company warrants all products manufactured by it to be free of defects in workmanship and materials when used under Normal Operating Conditions and when applied in accordance with nameplate specifications. This warranty shall be in effect for a period of twelve months from date of purchase or eighteen months from date of manufacture, whichever comes first.

The Bodine Electric Company will, at its option, repair, replace, or refund the purchase price of any of its products, which has been found to be defective and is within the warranty period, provided that the product is shipped freight prepaid, with previous authorization, to Bodine Electric, or to the nearest Bodine Authorized Service Center. At its option, all return shipments are F.O.B. Bodine's plant or Authorized Service Center. Bodine is not responsible for removal, installation, or any other incidental expenses incurred in shipping the product to or from Bodine.

**This warranty is in lieu of any other expressed or implied warranty-including (but not limited to) any implied warranties of merchantability and/or fitness for a particular use or purpose.**

Bodine's liability under this warranty shall be solely limited to repair or replacement of the Bodine product within the warranty period and Bodine shall not be liable, under any circumstances, for any consequential, incidental or indirect damages or expenses associated with the warranted products.

Commutators and/or brush wear and its associated effects are a normal occurrence and are not covered by this warranty unless otherwise agreed to by Bodine in writing.

Any Bodine product, which is damaged due to misuse, abuse, negligence or has been modified or dismantled without the knowledge or written consent of Bodine, is not covered by this warranty.

Motor/Gearmotor Serial No. \_\_\_\_\_ Purchase Date \_\_\_\_\_ Installed By \_\_\_\_\_

See Other Side for Safety, Installation, Use and Maintenance Information

**BODINE****ELECTRIC****COMPANY**

# Gearmotor/Motor Safety, Installation, Use, and Maintenance Information




Thank you for selecting a gearmotor/motor from Bodine Electric Company. With your new drive unit you will find yourself enjoying the same high performance and trouble free operation that has been characteristic of Bodine products since 1905.

Bodine Electric Company prides itself on the quality of design and manufacture of its products. Great care is taken in an attempt to provide products free of defects in workmanship, or materials.

## Safety

"The use of electric machines, like that of all other utilization of concentrated power, is potentially hazardous. The degree of hazard can be greatly reduced by proper design, selection, installation, and use, but hazards cannot be completely eliminated. The reduction of hazard is the joint responsibility of the user, the manufacturer of the driven or driving equipment, and the manufacturer of the machine".

Bodine products are designed and manufactured to comply to applicable safety standards and, in particular, to those issued by ANSI (American National Standards Institute), NEMA (National Electrical Manufacturers Association), U.L. (Underwriters Laboratories, Inc.), and CSA (Canadian Standards Association).

Most Bodine products are "third party approved" with respect to construction. Motors and gearmotors having component recognition by U.L. Inc. have a  symbol on their nameplates. Those that are CSA certified also have a  or a  mark in the same location. If you need specific information regarding the "third party approval" of Bodine products, contact your Bodine Representative, or the Corporate Headquarters.

However, since even well built apparatus can be installed or operated in a hazardous manner, it is important that the users observe safety considerations. With respect to the load and environment, the user must properly *select, install, and use* the apparatus-for guidance on all three aspects see safety standards publication No. ANSI/NEMA MG-2.\*

\* Standards Publication No. ANSI/NEMA MG-2. "Safety Standard for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators."

Available from:  
National Electrical Manufacturers Assoc.  
[www.nema.org](http://www.nema.org)

## Selection

Before proceeding with the installation, the user should review the application to confirm that the proper drive has been selected. This should be done after reading this notice and all applicable safety standards. If in doubt, contact your Bodine Representative or the Corporate Headquarters if there is no Representative in your area. Any selection or application suggestions made by Bodine or their Representatives are only to assist the customer-and in all cases, determination of fitness for purpose or use is solely the customer's responsibility.

All nameplate ratings are based on the following *normal operating conditions*:

1. Duty: 8 hours per day; 5 days per week if nameplated continuous duty (CONT), without frequent reversals or starts and stops.
2. Ambient temperature 0°C to 40°C, unless otherwise noted on the product nameplate.
3. Load: Uniform and free from shock or high inertia.
4. Voltage: Within 10% of nameplate rating.
5. Frequency: Within 5% of nameplate rating.
6. Combined variation of voltage and frequency- Within a total of 10% providing frequency variation does not exceed 5%.

Variations from the above conditions may be hazardous.

## Installation

It is the responsibility of the equipment manufacturer or individual installing the apparatus to take diligent care in installing it. The National Electrical Code (NEC), sound local electrical and safety codes, and when applicable, the Occupational Safety and Health Act (OSHA) should be followed when installing the apparatus to reduce hazards to persons and property.

## Inspection

Examine the apparatus for damage from shipment before connecting. Any claim(s) for shipping damage should be made to the freight carrier. Do not attempt to turn the output shaft of a gearmotor with an externally applied torque arm. Paint thickness of .003 maximum does not apply to published dimensional values.

## Mounting

Any screws or similar devices, that penetrate the motor frame either for mounting the Bodine product or mounting something to the product, should be limited in length so as not to come in contact with, or in close proximity to, intended features that conduct electricity.

Bodine stock products are designed for universal horizontal mounting. Vertical mounting, with gearhead above motor is not normally recommended. Consult the factory for custom mounting requirements.

## Connection

Follow nameplate for voltage, frequency, and phase of power supply. See accompanying wiring diagram as to connections for rotation (and capacitor, resistor, relay, protector, if required). *When connecting, make sure that your motor/gearmotor is securely and adequately grounded-failure to ground properly may cause serious injury to personnel.* Wiring diagrams are available at: [www.bodine-electric.com](http://www.bodine-electric.com)

## Wiring

For wire sizes and electrical connections refer to the National Electrical Code (NEC), Article 430, "Motors, Motor Circuits, and Controllers" and/or applicable local area codes. Extension cords should not be used.

## Use

### Additional Safety Considerations

The chance of electric shock, fires, or explosions can be reduced by giving proper consideration to the use of grounding, thermal and over current protection, type of enclosure, and good maintenance procedures.

The following information *supplements* the foregoing safety considerations: This information is not purported to be all-inclusive and the aforementioned references should be consulted.

1. Bodine standard totally enclosed products are neither explosion proof nor dust ignition proof and are not certified for hazardous locations in the presence of flammable/explosive gas, vapor, or dust. When dealing with hazardous locations, an approved or certified product is generally the recommended approach. The NEC and NEMA safety standards should be consulted to determine if exceptions are allowed.
2. Enclosed motors/gearmotors are suitable for dirty, damp locations. For outdoor use, enclosed motors must be protected by a IP-44 sealing kit or a cover while still allowing adequate airflow.

3. Moisture will increase the electrical shock hazard of electrical insulation. Therefore, consideration should be given to the avoidance of (or protection from) liquids in the area of motors. Use of totally enclosed motors/gearmotors will reduce the hazard if all openings are sealed.
4. Motors/gearmotors that employ capacitors can develop more than nameplate voltage across the capacitor and/or capacitor winding (depending on design). Suitable precautions should be taken when applying such motors.
5. Do not rely upon self-locking gears or permanent magnet, or energized motors to hold a load in place if movement could result in personal injury. Mechanical locking devices should be used in such applications.
6. For motors driven by electronic controls, do not use a function of the control for safety interlock purposes. An independent switch or relay should be used.

## Before Starting

1. Before attempting to start, check all connections and fuses.
2. Proper consideration should be given to rotating members: Before starting, be sure keys, pulleys, etc. are securely fastened. *Proper guards should be provided to prevent hazards to personnel while rotating.*
3. Other mechanical considerations include proper mounting and alignment of products and safe loads on shafting and gearing.

## Starting

The motor/gearmotor should be test-started in an unloaded state (because of possible reaction torque, the drive should be securely mounted when starting-even when unloaded). If the drive unit does not start promptly and run smoothly, disconnect immediately. If unable to correct the problem, contact your purchase source, or a Bodine Authorized Service Center, describing the trouble in detail. Include the serial number, type, and other nameplate data. Do not dismantle the product-tampering or disassembly voids the warranty.

## Maintenance

**IMPORTANT-*Before*** servicing or working on equipment, disconnect power source (this applies especially to equipment using automatic restart devices instead of manual restart devices and when examining or replacing brushes on brush-type motors/gearmotors).

Clean regularly to prevent dirt and dust from interfering with ventilation or clogging moving parts.

*Brush-Type Motors/Gearmotors-*For optimum performance, brush-type motors and gearmotors need periodic user-maintenance. The maintenance interval is best determined by the user. Inspect brushes regularly for wear (replace in same axial position). Replace brushes as needed.

*Products Employing Capacitors-*Before servicing motors/gearmotors employing capacitors, always discharge the capacitor by placing a conductor across its terminals before touching the terminals with any part of your body.

## Lubrication

All Bodine products are lubricated for life, and do not require re-lubrication. (All information and data are subject to change without notice)

# MATERIAL SAFETY DATA SHEET

<b>SECTION 1</b>	<b>PRODUCT AND COMPANY IDENTIFICATION</b>
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**PRODUCT**

**Product Name:** MOBILITH SHC 007  
**Product Description:** Synthetic Base Stocks and Additives  
**Product Code:** 643569-00, 970042  
**Intended Use:** Grease

**COMPANY IDENTIFICATION**

**Supplier:** EXXON MOBIL CORPORATION  
 3225 GALLOWS RD.  
 FAIRFAX, VA. 22037 USA

**24 Hour Health Emergency** 609-737-4411  
**Transportation Emergency Phone** 800-424-9300  
**ExxonMobil Transportation No.** 281-834-3296  
**Product Technical Information** 800-662-4525, 800-947-9147  
**MSDS Internet Address** <http://www.exxon.com>, <http://www.mobil.com>

<b>SECTION 2</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
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**Reportable Hazardous Substance(s) or Complex Substance(s)**

Name	CAS#	Concentration*
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	< 2.5%

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

<b>SECTION 3</b>	<b>HAZARDS IDENTIFICATION</b>
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This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

**POTENTIAL HEALTH EFFECTS**

Low order of toxicity. Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

<b>NFPA Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0
<b>HMIS Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0

**NOTE:** This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

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## SECTION 4 FIRST AID MEASURES

### INHALATION

Under normal conditions of intended use, this material is not expected to be an inhalation hazard.

### SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

### EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

### INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

## SECTION 5 FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight Streams of Water

### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Hazardous Combustion Products:** Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >204C (400F) [EST. FOR OIL, ASTM D-92 (COC)]

**Flammable Limits (Approximate volume % in air):** LEL: N/D UEL: N/D

**Autoignition Temperature:** N/D

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

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## PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

## SPILL MANAGEMENT

**Land Spill:** Stop leak if you can do it without risk. Scrape up spilled material with shovels into a suitable container for recycle or disposal.

**Water Spill:** Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Skim from surface.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

## ENVIRONMENTAL PRECAUTIONS

Prevent entry into waterways, sewers, basements or confined areas.

## SECTION 7

## HANDLING AND STORAGE

### HANDLING

Avoid contact with skin. Prevent small spills and leakage to avoid slip hazard.

**Static Accumulator:** This material is not a static accumulator.

### STORAGE

Do not store in open or unlabelled containers.

## SECTION 8

## EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMIT VALUES

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

### ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

### PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications,

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handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended.

**Eye Protection:** If contact is likely, safety glasses with side shields are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

## ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

## SECTION 9

## PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

### GENERAL INFORMATION

**Physical State:** Solid

**Form:** Semi-fluid

**Color:** Red

**Odor:** Characteristic

**Odor Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 C):** 0.866

**Flash Point [Method]:** >204C (400F) [EST. FOR OIL, ASTM D-92 (COC)]

**Flammable Limits (Approximate volume % in air):** LEL: N/D UEL: N/D

**Autoignition Temperature:** N/D

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**Boiling Point / Range:** N/D  
**Vapor Density (Air = 1):** N/D  
**Vapor Pressure:** < 0.013 kPa (0.1 mm Hg) at 20 C [Estimated]  
**Evaporation Rate (n-butyl acetate = 1):** N/D  
**pH:** N/A  
**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5 [Estimated]  
**Solubility in Water:** Negligible  
**Viscosity:** >414 cSt (414 mm<sup>2</sup>/sec) at 40 C  
**Oxidizing Properties:** See Hazards Identification Section.

## OTHER INFORMATION

**Freezing Point:** N/D

**Melting Point:** N/A

NOTE: Most physical properties above are for the oil component in the material.

## SECTION 10 STABILITY AND REACTIVITY

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**HAZARDOUS POLYMERIZATION:** Will not occur.

## SECTION 11 TOXICOLOGICAL INFORMATION

### ACUTE TOXICITY

<u>Route of Exposure</u>	<u>Conclusion / Remarks</u>
<b>Inhalation</b>	
Toxicity: No end point data.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
<b>Ingestion</b>	
Toxicity (Rat): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
<b>Skin</b>	
Toxicity (Rabbit): LD50 > 5000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

### CHRONIC/OTHER EFFECTS



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**Contains:**

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

Additional information is available by request.

**The following ingredients are cited on the lists below:** None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC

3 = IARC 1

5 = IARC 2B

2 = NTP SUS

4 = IARC 2A

6 = OSHA CARC

**SECTION 12**

**ECOLOGICAL INFORMATION**

The information given is based on data available for the material, the components of the material, and similar materials.

**ECOTOXICITY**

Material -- Not expected to be harmful to aquatic organisms.

**MOBILITY**

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

**SECTION 13**

**DISPOSAL CONSIDERATIONS**

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

**REGULATORY DISPOSAL INFORMATION**

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

**Empty Container Warning** Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken

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for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

## SECTION 14 TRANSPORT INFORMATION

**LAND (DOT):** Not Regulated for Land Transport

**LAND (TDG):** Not Regulated for Land Transport

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**AIR (IATA):** Not Regulated for Air Transport

## SECTION 15 REGULATORY INFORMATION

**OSHA HAZARD COMMUNICATION STANDARD:** When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

**Complies with the following national/regional chemical inventory requirements::** IECSC, EINECS, KECI, TSCA  
**Special Cases:**

Inventory	Status
AICS	Restrictions Apply
NDSL	Restrictions Apply

**EPCRA:** This material contains no extremely hazardous substances.

**SARA (311/312) REPORTABLE HAZARD CATEGORIES:** None.

**SARA (313) TOXIC RELEASE INVENTORY:**

Chemical Name	CAS Number	Typical Value
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	< 2.5%

**The following ingredients are cited on the lists below:**

Chemical Name	CAS Number	List Citations
DIPHENYLAMINE	122-39-4	5, 18
NAPHTHENIC ACIDS, ZINC SALTS	12001-85-3	15
PHOSPHORODITHOIC ACID,	68649-42-3	13, 15, 17

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O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)		
ZINC NEODECANOATE	27253-29-8	15

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

<b>SECTION 16</b>	<b>OTHER INFORMATION</b>
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N/D = Not determined, N/A = Not applicable

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Revision Changes:

- Section 04: First Aid Skin was modified.
- Section 04: First Aid Inhalation was modified.
- Section 06: Notification Procedures - Header was modified.
- Section 13: Disposal Considerations - Disposal Recommendations was modified.
- Section 10 Stability and Reactivity - Header was modified.
- Section 13: Disposal Recommendations - Note was modified.
- Section 13: Empty Container Warning was modified.
- Section 09: Phys/Chem Properties Note was modified.
- Section 09: n-Octanol/Water Partition Coefficient was modified.
- Section 08: Personal Protection was modified.
- Section 08: Hand Protection was modified.
- Section 07: Handling and Storage - Handling was modified.
- Section 11: Dermal Lethality Test Data was modified.
- Section 11: Oral Lethality Test Data was modified.
- Section 11: Inhalation Lethality Test Data was modified.
- Section 05: Hazardous Combustion Products was modified.
- Section 06: Accidental Release - Spill Management - Land was modified.
- Section 06: Accidental Release - Spill Management - Water was modified.
- Section 09: Relative Density - Header was modified.
- Section 09: Flash Point C(F) was modified.
- Section 09: Viscosity was modified.
- Section 08: Hand Protection was modified.
- Section 08: Skin and Body Protection was modified.
- Section 14: Sea (IMDG) - Header was modified.
- Section 14: Air (IATA) - Header was modified.
- Section 14: LAND (TDG) - Header was modified.
- Section 14: LAND (DOT) - Header was modified.
- Composition: Component table was modified.
- Section 15: List Citations Table was modified.
- Section 15: List Citation Table - Header was modified.
- Section 14: LAND (DOT) - Default was modified.
- Section 14: LAND (TDG) Default was modified.

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Section 14: Sea (IMDG) - Default was modified.  
Section 14: Air (IATA) - Default was modified.  
Section 15: National Chemical Inventory Listing - Header was modified.  
Section 15: SARA (313) TOXIC RELEASE INVENTORY - Table was modified.  
Section 15: National Chemical Inventory Listing was modified.  
Section 16: Code to MHCs was modified.  
Section 16: Code to PPEs was modified.  
Section 08: Exposure limits/standards was modified.  
Section 15: OSHA Hazard Communication Standard was modified.  
Section 15: Special Cases Table was modified.  
Hazard Identification: OSHA - May be Hazardous Statement was modified.  
Section 06: Notification Procedures was modified.  
Section 09: Oxidizing Properties was modified.  
Section 01: Company Contact Methods Sorted by Priority was modified.  
Section 06: Protective Measures was added.  
Section 06: Accidental Release - Protective Measures - Header was added.  
Section 12: Ecological Information - Acute Aquatic Toxicity was added.  
Section 12: Ecological Information - Acute Aquatic Toxicity was added.  
Section 09: Section 9 Footnotes was added.  
Section 09: Vapor Pressure was added.  
Hazard Identification: Environmental Hazard was deleted.  
Hazard Identification: Environmental Hazard - Header was deleted.  
Section 12: Ecological Information - Acute Aquatic Toxicity was deleted.  
Section 12: Ecological Information - Acute Aquatic Toxicity was deleted.  
Section 15: TSCA Class 2 Statement was deleted.

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