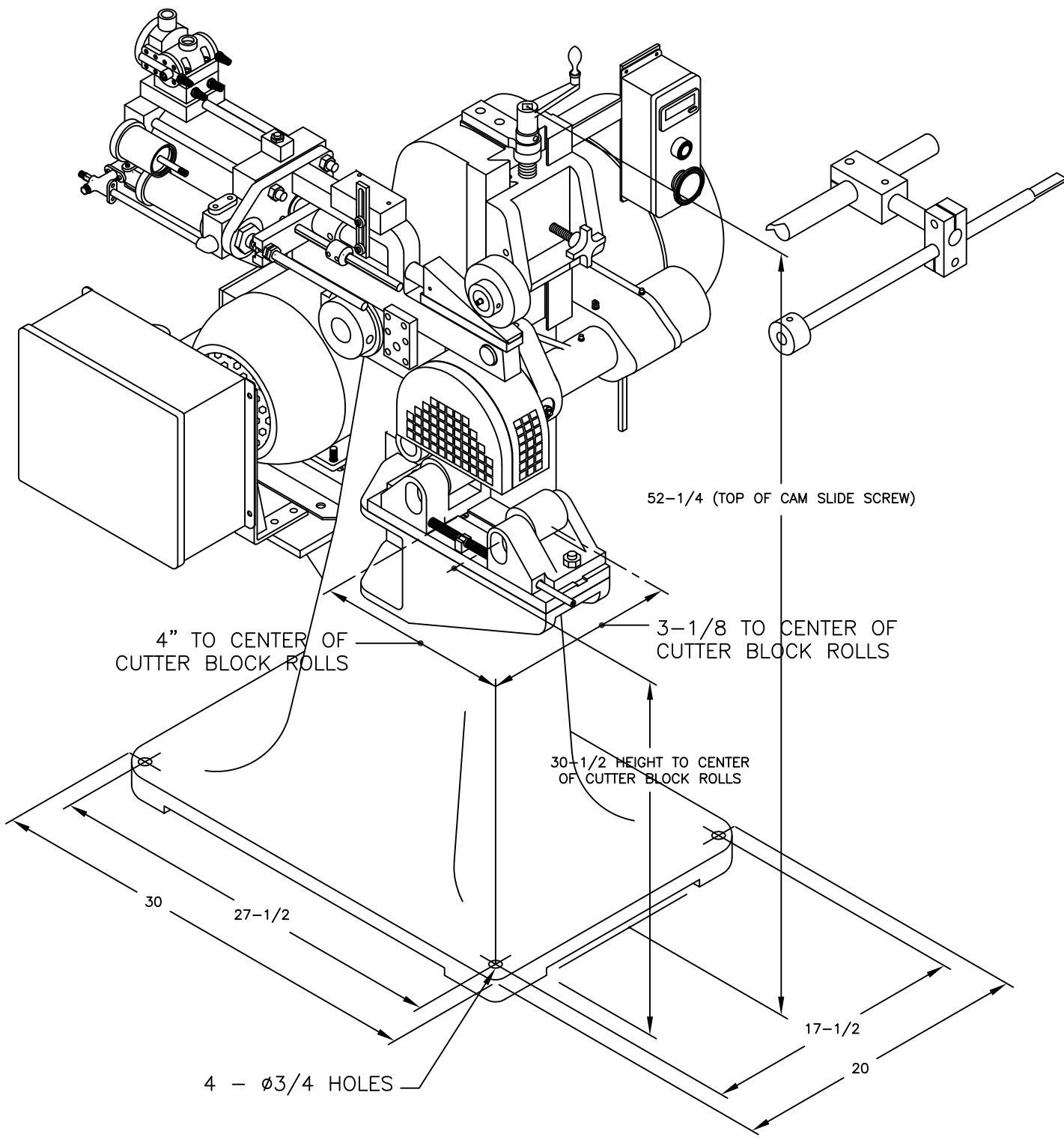


CONTINENTAL MODEL 3A
PIPE AND TUBE CUT-OFF MACHINE
SERIAL NO. _____
INSTRUCTION AND PARTS MANUAL

**CONTINENTAL MODEL 3A
PIPE AND TUBE CUT-OFF MACHINE
INSTRUCTION AND PARTS MANUAL**

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CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

OVERALL DIMENSIONS
 MODEL 3A CUT-OFF MACHINE

CURRENT REVISION: C	DATE: 1/30/14	DRAWING NUMBER: MODEL 3A OVERALL DIMENSIONS
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SECTION A. SAFETY INSTRUCTIONS

1. Read and understand this manual before operating this machine.
2. NEVER operate this machine with any guard or cover open or removed.
3. Provide a fused, switched disconnect for incoming power line in accordance with the National Electrical Code.
4. If starter box cover is removed, high voltage connections are exposed. Customer supplied disconnect switch should be turned off and locked off, before removing starter box cover.
5. This machine is powered by high voltage electricity. Electrical repairs should be made by a qualified electrician.
6. NEVER reach into the work area of the machine while the cuttershaft is turning.
7. This machine will cut a wide range of tubing diameters and lengths. Each customer's layout, method of supporting the tubing, and material flow into and out of the machine is different. As such, it is impossible for the manufacturer to provide a universal guard to keep operator's hands out of the machine. It is the customer's responsibility to:
 - provide a method to catch and collect cut pieces.
 - provide guards to prevent the operator from accidentally placing hands in the cutting area.
 - install guards along the tube being cut to prevent injury.
8. Movement of various parts may create pinch points. Operator must avoid these points.
9. NEVER wear loose clothing or jewelry that could become entangled in the machine or workpiece.
10. When changing a cut-off blade, turn off power at the customer supplied disconnect switch.
11. Be certain to remove wrench after replacing cut-off blade. NEVER leave wrench hanging from the cuttershaft.
12. NEVER push pipe or tube into the cutting area from the front of the machine. A turning cut-off blade may catch and throw it possibly causing personnel injury and equipment damage. ALWAYS slide the tube into the cutting area from the cut-off blade side of the machine.
13. ALWAYS feed pipe or tube into the cutting area from the cut-off blade side of the machine. Feeding material from the opposite side can result in the operator's hand being pinched between the pipe or tube and the underside of the Cutter Arm as the cut is being made.
14. NEVER attempt to cut material that is bent, twisted, or otherwise distorted.
15. The cutting operation may produce sharp edges and considerable heat. NEVER attempt to catch work pieces as they are cut. Take precautions when handling cut pieces.

SECTION B. INSTALLATION

DIMENSIONS

Drawing "Model 3A Overall Dimensions" shows the overall dimensions of the machine.

LEVELING

Place the machine in the desired location. Transfer the mounting holes in the base to the floor. Then, move the machine and drill the floor for 5/8" anchor bolts. Place the machine back into position, and check the cutter block mounting surface for level, particularly in the side-to-side direction. Shim the base as necessary to level and eliminate any rocking. After shimming, bolt the machine securely to the floor.

ELECTRICAL

The electrical characteristics of the machine are stamped on a nameplate attached to the starter box. Connect the incoming lines from a disconnect switch (customer supplied) to the L1, L2, L3 terminals on the motor starter (or variable speed drive, if so equipped) located in the control box. Check to make sure that rotation of the cutter shaft is clockwise when viewed from the cut-off blade side. This will prevent pipe from being thrown out of the machine. If rotation is incorrect, reverse any two of the incoming lines.

AIR CONNECTION

A Filter/Regulator/Lubricator Unit (Part No. 4520) is provided at the rear of the machine. Connect shop air to the inlet side of this unit, and fill the lubricator bowl with air line oil.

CUTTER BLOCKS

Cutter blocks are available for tube sizes within the range of the Model 3A (see current Continental Catalog). Select the appropriate cutter block for the tube size to be cut, and bolt it to the cutter block bracket on the machine. Note that slots are provided on the cutter block base for front-to-back adjustment.

The cutter block must be set perpendicular to the cut-off blade or "threading" will occur. Threading is a condition where the tube moves sideways as the cut-off blade contacts it. To correct threading, loosen the front cutter block bolt slightly and tap the cutter block to move it in the opposite direction of the threading. (If tube is threading to the right, move the front of the cutter block to the left and vice versa.) Then, re-tighten the cutter block bolt. Repeat until threading is eliminated.

TUBE SUPPORTS

If a Model 425 or 426 Tube Support Table is to be used with this machine, it should be assembled and installed according to the instructions provided with it.

If pipe supports are to be used, they must be carefully aligned with the machine, and bolted to the floor. First, set the supports in place. They should be spaced so that the tube to be cut does not sag between the supports. NOTE: If short pieces are to be cut, place one of the supports close to the machine. Place a length of tube or bar stock in the supports and the cutter block rolls. Adjust the supports so that the tube is touching the entire length of both cutter block rolls (front and back), and all pipe support rolls.

At this point, the pipe supports should be bolted to the floor. Carefully mark the center of each hole in the pipe support bases. Then, drill and bolt to floor using 3/8" lag bolts with anchors.

Rotate the Pipe Support Heads so they are perpendicular to the tube (rolls will be aligned with tube). If the heads are not perpendicular to the tube, threading of the tube can result, particularly if polyurethane coated pipe support rolls are used.

Recheck alignment of pipe supports with the cutter block rolls. Misalignment may result in cut-off blade breakage, tube threading, and poor cuts.

LENGTH GAUGE

The Model 3A may be equipped with either a Model 443 Standard Length Gauge or a Model 447 Automatic Length Gauge.

Model 443 Standard Length Gauge

If a Model 443 Standard Length Gauge is provided, then assemble as follows. Refer to drawing "PI 443 & 444" in the Parts Illustration section.

1. Slide the #5515 Gauge Rod into the 1-1/2" bores in the column. Place the #5458 Shaft Collar on the end of the Gauge Rod on the Cut-Off Blade side of the column and tighten set screw. Spread a light coat of grease on the boss on each side of column.
2. Slide the #5100 Gauge Lever onto the Gauge Bar on the opposite side of the column. Press the #5458 Collar and #5100 Gauge Lever lightly against the column and tighten the clamp bolt on the #5100 Gauge Lever. There should be no end play in the Gauge Rod.
3. Attach #5715 Spring at rear of Gauge Lever to #5444 Gauge Lever Spring Pin on column. Install #5425 Gauge Lever Bar and Roller in front of gauge lever.
4. Assemble #5485 Gauge Support (back), #5505 Gauge Bracket Bar, #5439 Gauge Support (front), and #5354 Gauge Pin with #5516 Pipe Stop. Slide this assembly onto the #5515 Gauge Bar.

NOTE: The #5354 Gauge Pin may be set up with the round pipe stop facing the cutter blocks, or for short cut-off lengths, the narrow blade-shaped end may face the cutter blocks and fit between the cutter block rolls.

Model 447 Automatic Length Gauge

If a Model 447 Automatic Length Gauge is provided, then assemble as follows. Refer to drawing "PI 447 & 448" in the Parts Illustration section.

1. The components required to mount the Model 447 Automatic Length Gauge to the Model 3A Machine are packed in a separate box and consist of the following items:
 - 1 #5998 Gauge Bar, 1-1/4" square, 6 feet long
 - 1 #5448 Pivot Bracket
 - 1 #5449 Spacer
 - 1 #5719 1-1/4-7 Jam Nut
 - 2 #5982 Gauge Bar Bushing
 - 1 #5350 Bolt Spacer
 - 1 #5499 Air Cylinder Bracket (Frame with Air Cylinder, Wiring & Air Line attached)
 - 1 #5358 Gauge Bar Support

Required fasteners (in package):

1/2-13 X 3 Hex Head Cap Screw
1/2 SAE Washer
1/2 Split Lock Washer
3/8-16 X 2-3/4 Hex Head Cap Screw
3/8-16 X 1-1/4 Hex Head Cap Screw
3/8 SAE Washer
3/8 Split Lock Washer
3/8 Internal Lock Washer

2. Attach #5448 Pivot Bracket and #5449 Spacer to column. Use the fasteners shown on the enclosed drawing "PI 447 & 448".
3. Slide #5998 Gauge Rod through #5448 Pivot Bracket, #5982 Gauge Bar Bushing and the machine Column. Install second #5982 Gauge Rod Bushing and secure with #5719 Jam Nut.
4. Slide #5499 Air Cylinder Bracket onto #5998 Gauge Rod. Attach #5358 Bar Support to end of #5998 Gauge Rod. Secure #5358 Bar Support to floor.
5. Connect 3/8" x 15' Air Hose to Brass Tee at Filter/Regulator/Lubricator on Cut-Off Machine.
6. Attach conduit connector from #5210 Junction Box to 7/8" hole in Cut-Off Machine Terminal Box. Connect four wires, numbered 3, 4, 5, and 7, to corresponding terminals in terminal box.
7. Tighten the 3/8 Set Screw on #5500 Gauge Pin Holder as required to eliminate double-actuating of the #5211 Cutting Switch.

SECTION C. C O N T R O L S

START/STOP SWITCH

This switch is located at the front of the machine. Pressing "START" starts the drive motor. Pressing "STOP" simultaneously stops the drive motor and retracts the air cylinder, raising the cut-off blade.

FOOT SWITCH

Pressing the foot switch causes the air cylinder to extend, initiating the cut-off stroke.

AUTOMATIC LENGTH GAUGE SWITCH

This switch is provided only on machines equipped with a Model #447 Automatic Length Gauge. It is actuated when the pipe or tube pushes against the pipe stop. It acts the same as the foot switch, initiating the cutting stroke.

SWITCH - DEPTH OF CUT

This is a limit switch located on the #5105 Air Cylinder Support. When tripped, this switch causes the air cylinder to retract, ending the cut-off stroke.

AIR PRESSURE

Air pressure to the air cylinder may be adjusted at the Filter/Regulator/Lubricator Unit. Adjusting the air pressure changes the total force available to push the cut-off blade through the cut. It should generally be set at 40 to 60 psi. Lighter wall tubing requires lower pressures and heavier wall tubing requires higher pressures.

AIR CYLINDER SPEED CONTROL

The cutting stroke consists of three parts: an initial rapid portion to move the cut-off blade quickly to the tube, a slower, controlled cutting stroke, and another rapid stroke to return the cut-off wheel to starting position. The speed of the two rapid moves is controlled by the Speed Control Screw located on the Exhaust Muffler/Speed Control (on the air cylinder control valve). It should be adjusted to provide a quick action, but not so fast that the motion is harsh or jerky. The speed control screw has been set at the factory and should not require adjustment unless the air pressure is set very high or very low.

HYDROCHECK

The Hydrocheck is attached to the air cylinder and provides a hydraulic limiting action on the cutting portion of the stroke. This allows control of the cutting speed. Two nuts on the Hydrocheck Rod allow adjustment of the point at which the Hydrocheck action begins. A control knob at the bottom of the Hydrocheck allows adjustment of the cutting speed feed rate. Turning the knob clockwise will slow the feed rate. Turning the knob counterclockwise will increase the feed rate. A locking knob is provided.

SWITCH - LENGTH GAUGE RETRACT

This limit switch is provided only on machines equipped with a Model 447 Automatic Length Gauge. The switch is located on the #5105 Air Cylinder Support and it controls the point at which the length gauge is retracted.

COUNTER

An electronic 8-digit counter is installed at the front of the cut-off machine. The counter display is powered by an internal lithium battery, which provides up to six years of continuous operation. The counter has a front panel reset button. When first starting the cut-off machine, press the reset button to clear the counter display.

SPEED CONTROL

A dial-type control is located at the front of the machine when a variable speed drive is supplied. It controls the rotational speed of the cut-off machine.

- Increasing the rotational speed of the cut-off machine can improve production rates.
- Slowing the rotational speed of the cut-off machine may allow slightly bent tubing to be cut successfully.

SWITCH – KENTUCKY GAUGE FUNCTION

This limit switch is provided when a Kentucky Gauge feeder is supplied with the cut-off machine.

SECTION D. SET-UP AND OPERATION

CAUTION:

BEFORE ATTEMPTING TO OPERATE THE MODEL 3A, READ AND UNDERSTAND THIS SECTION COMPLETELY.

CAUTION:

NEVER PUSH PIPE OR TUBE INTO THE CUTTING AREA FROM THE FRONT OF THE MACHINE. THE CUT-OFF BLADE CAN CATCH AND THROW THE MATERIAL, CAUSING PERSONAL INJURY AND EQUIPMENT DAMAGE. ALWAYS SLIDE THE MATERIAL INTO THE CUTTING AREA FROM THE CUT-OFF BLADE SIDE OF THE MACHINE.

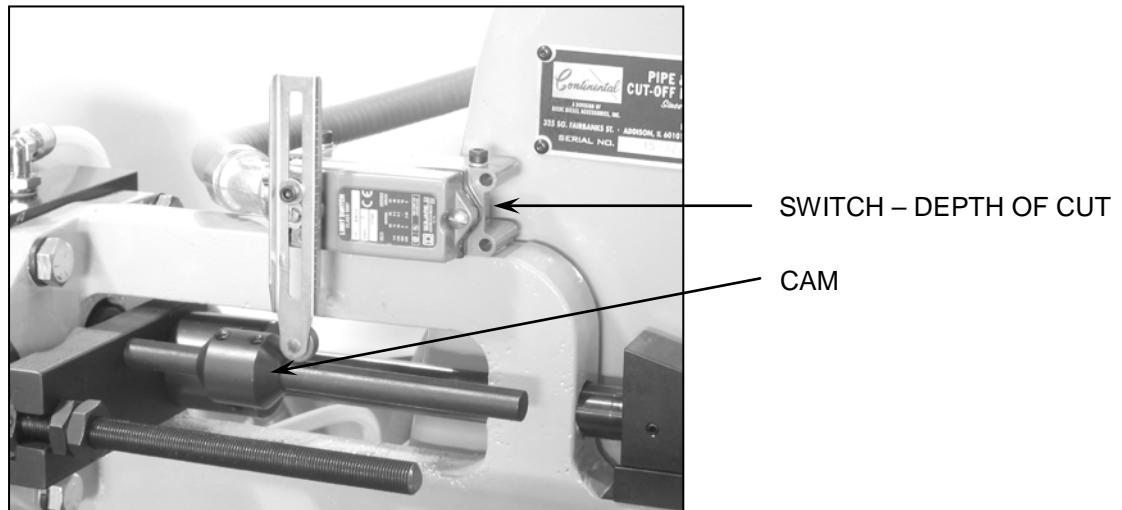
CAUTION:

ALWAYS FEED PIPE OR TUBE INTO THE CUTTING AREA FROM THE CUT-OFF BLADE SIDE OF THE MACHINE. FEEDING MATERIAL FROM THE OPPOSITE SIDE CAN RESULT IN THE OPERATOR'S HAND BEING PINCHED BETWEEN THE PIPE OR TUBE AND THE UNDERSIDE OF THE CUTTER ARM AS THE CUT IS BEING MADE.

Follow the steps below to set-up and operate the Model 3A for the various size pipe and tubes to be cut:

1. Install the appropriate cut-off blade for the tube to be cut. See current Continental catalog for a description of cut-off blade models. Remove the #5723 Cutter Shaft Nut and #5306 Clamp Collar and place the cut-off blade on the Cutter Shaft. Replace the Clamp Collar and Nut and tighten. Seat the nut securely by tapping the end of the wrench with a mallet.
2. Select the appropriate cutter block for the tubing size to be cut. See the current Continental catalog for a list of cutter blocks.
3. Mount the cutter block on the machine. Roughly center it in the slots provided, and align with the cut-off blade. Adjust the spacing of the cutter block rolls so that an angle of approximately 90 degrees is formed by lines from the center of the tube to the center of each roll.
4. Place a length of the tube to be cut in the cutter block rolls and the Pipe Support or Support Table Rolls. Adjust the Pipe Supports or Support Table vertically to align with the cutter block rolls. It may be necessary at this point to slide the cutter block forward or backward slightly to achieve this alignment. The cutter block must remain aligned with the cut-off blade.
5. Set air pressure to approximately 40 to 60 psi.
6. Set the knurled adjusting knob on the #4550 Hydrocheck so that it is just slightly opened. This will provide a very slow feeding speed and is a good precaution for the first few trial strokes.
7. Loosen the #5300 Camslide Set Screw. Position the #5123 Camslide (by turning the #5705 Handle) so that the cut-off blade touches the tube. Then turn the Handle clockwise one revolution, so that the cut-off blade is raised off of the tube. Tighten the Camslide Set Screw.

8. Set the Stop Nuts on the Hydrocheck so that the link between the Air Cylinder and Hydrocheck contacts the nut just before the blade contacts the pipe.
9. Adjust the #5851 Cam for the #5224-1 Switch - Depth of Cut so that the cut-off blade just passes through the thickness of the material.



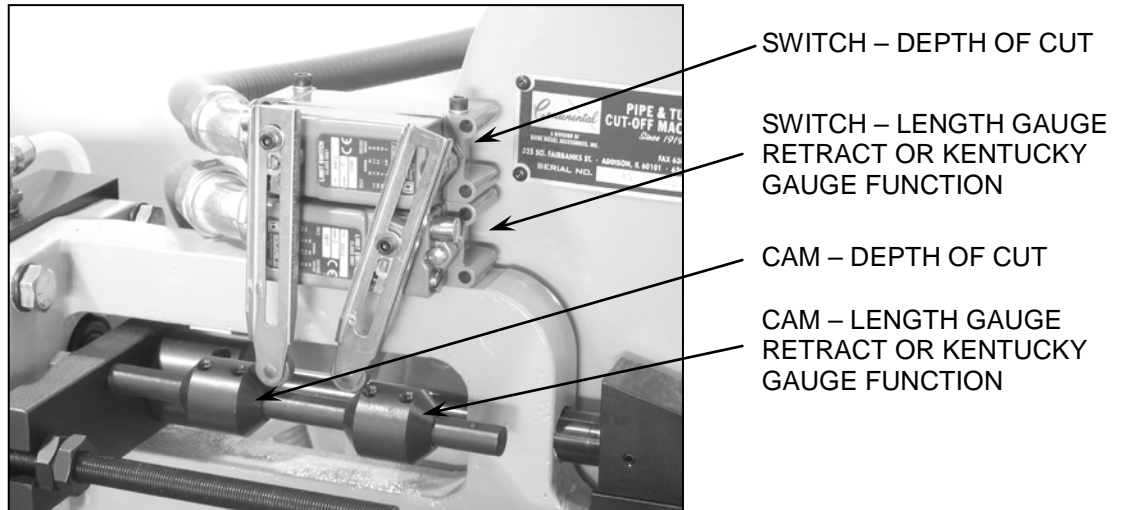
SWITCH AND CAM ARRANGEMENT FOR CUT-OFF MACHINES FURNISHED WITH A STANDARD LENGTH GAUGE

10. Run a trial stroke with the pipe adjacent to, but not under the cut-off blade. Observe the point at which the Hydrocheck engages and the point at which the Switch for Depth of Cut is tripped. Adjust accordingly.

NOTE: DO NOT ALLOW THE CUT-OFF BLADE TO CONTACT THE CUTTER BLOCK ROLLS. THIS WILL RESULT IN IMMEDIATE DAMAGE TO THE BLADE AND ROLLS.

11. If a Model 443 Standard Length Gauge is furnished, complete the following steps:
 - A. Adjust the Gauge Assembly so that the pipe stop is set at the desired length and engages the edge of the tube.
 - B. Adjust the #5425 Gauge Lever Bar and Roller so that the underside of the cut-off arm contacts it and pushes the gauge assembly out of the way just after the cut-off blade engages the tube. This prevents the tube from moving as the length gauge clears the work.
12. If a Model 447 Automatic Length Gauge is furnished, complete the following steps:
 - A. Adjust the #5851 Cam for the #5224-1 Switch - Length Gauge Retract so that the length gauge retracts shortly after the cut-off blade contacts the tube. **See the photograph on the following page for the arrangement of the switch and cam.**
 - B. Using the #5448 Adjusting Bracket, adjust the height of the pipe stop. Generally, the bottom of the work should contact the top of the pipe stop.
 - C. To set the gauge for length, loosen the two Clamping Bolts on the #5499 Cylinder Bracket. Slide the Cylinder Bracket along the #5998 Gauge Bar to adjust length, allowing approximately 1/8" for movement of the switch. Retighten bolts.

- D. To operate the Cut-Off Machine using the Automatic Length Gauge, slide the tube firmly against the pipe stop. This will trip the #5211 Automatic length Gauge Switch, activating the cut-off stroke. Hold the tube against the stop until the cut-off blade engages the cut.



SWITCH AND CAM ARRANGEMENT FOR CUT-OFF MACHINES FURNISHED WITH A MODEL 447 AUTOMATIC LENGTH GAUGE OR KENTUCKY GAUGE FEEDER

13. To make production cuts with the Standard Length Gauge, hold the tubing firmly against the Pipe Stop and press the foot switch. Hold the tube against the stop until the blade engages the cut. In the case of the Automatic Length Gauge, simply push the tube against the stop and hold firmly until the cut-off blade engages the cut. **Do not hold the Foot Switch or the Automatic Length Gauge Switch closed during the cutting action. If they are closed at the same time that the #5224-1 Switch - Depth of Cut is actuated (at end of cutting stroke), damage to the Air Cylinder Solenoid will result.**
14. Place the material to be cut in the machine and run trial cuts. Adjust as required. Although the characteristics of the cutting process will vary significantly with tube size, wall thickness, and particularly material, the following will generally apply:
- A faster cut will reduce the O.D. burr, and a slower cut will reduce the I.D. burr.
 - Spreading the rolls apart will reduce the O.D. burr; moving them closer together will reduce the I.D. burr.
 - Generally, the best cut is the fastest cut that will produce the desired end conditions. A fast cut produces less heat and less wear on the blade.
 - See the CUT-OFF BLADES NOTES section for additional information concerning adjustment of the cutting process.
15. Lock all adjustments so that they do not change during production.

CUT-OFF BLADE NOTES

Continental Cut-Off Blades are available for almost all tube sizes and wall thicknesses. These blades are manufactured from S-7 Tool Steel. They are held to precise tolerances and heat treated to provide a long life. They may be resharpened using one of the Continental Grinders (see current catalog), or sent to Continental Pipe & Tube Cut-Off Machines for resharpening. With proper care, Continental Cut-Off Blades will provide thousands of cuts.

Following is a checklist of circumstances that can result in shortened blade life. Review this list when blade life is shorter than expected, or when unsatisfactory cutting action is encountered.

1. Make certain correct blade model is being used. Check current Continental Catalog for applications.
2. #5723 Nut must be tightened securely to make certain the Cut-Off Blade is clamped flat and cannot slip.
3. Make certain that the blade does not touch the cutter block rolls at the end of the stroke. This will immediately damage both the blade and the rolls.
4. Check alignment of the tubing in the pipe supports and cutter block roll (see OPERATION Section). This alignment is critical for smooth cuts and long blade life.
5. Make certain that the tube spins freely on the supports. Any drag or binding can cause the Cut-off Blade to slip against the pipe as it cuts.
6. Check adjustment of the Length Gauge to make certain it clears the tube shortly after the Cut-Off Blade engages the cut. As the cut is made, the end of the tube is actually moved towards the Length Gauge. If the gauge has not cleared the end of the tube it will cause binding.
7. On air powered machines, check to be sure the Hydrocheck engages BEFORE the Cut-Off Blade contacts the tube.
8. Make sure that the tubing is not striking the side of the Cut-Off Blade as it is advanced into position.
9. On tough or heavy wall material, a lubricating oil may be required to assist the cut. Use LUBRICATING oil, NOT cutting oil.
10. Do not attempt to cut excessively bent, twisted or otherwise distorted material.
11. Tubing material can vary significantly, even within one lot. Hard areas may be encountered, which can shorten blade life.
12. If material is long (over 20 ft.) or very heavy, the Cut-Off Blade may have difficulty spinning it. This will cause the blade to slip, shortening blade life.
13. During resharpening, the edge of the blade must not become overheated. This will cause the edge to soften.

14. After resharpening, the edge of the blade should be honed with a stone (available as Continental Part No. #5959) to remove the sharp edge, and provide a rounded edge. The sharper the edge the more fragile it is.

NOTE:

- A. If a sharper edge is left on the blade (less honing), the blade will cut faster and with less pressure, but will not last as long between resharpenings. This is more appropriate for thin-walled, softer, materials.
 - B. If a more blunt edge is left on the blade (more honing), the blade will require more pressure to cut, but will last longer between resharpenings. This is more appropriate for heavier walled, tougher materials.
15. If a Cut-Off Blade becomes dull or nicked during use, remove it immediately and have it resharpened. If it is left in service, the damage will become worse. In a relatively short time, the blade will be ruined.

FIG. 1 — RECOMMENDED CUT-OFF BLADE BEVELS

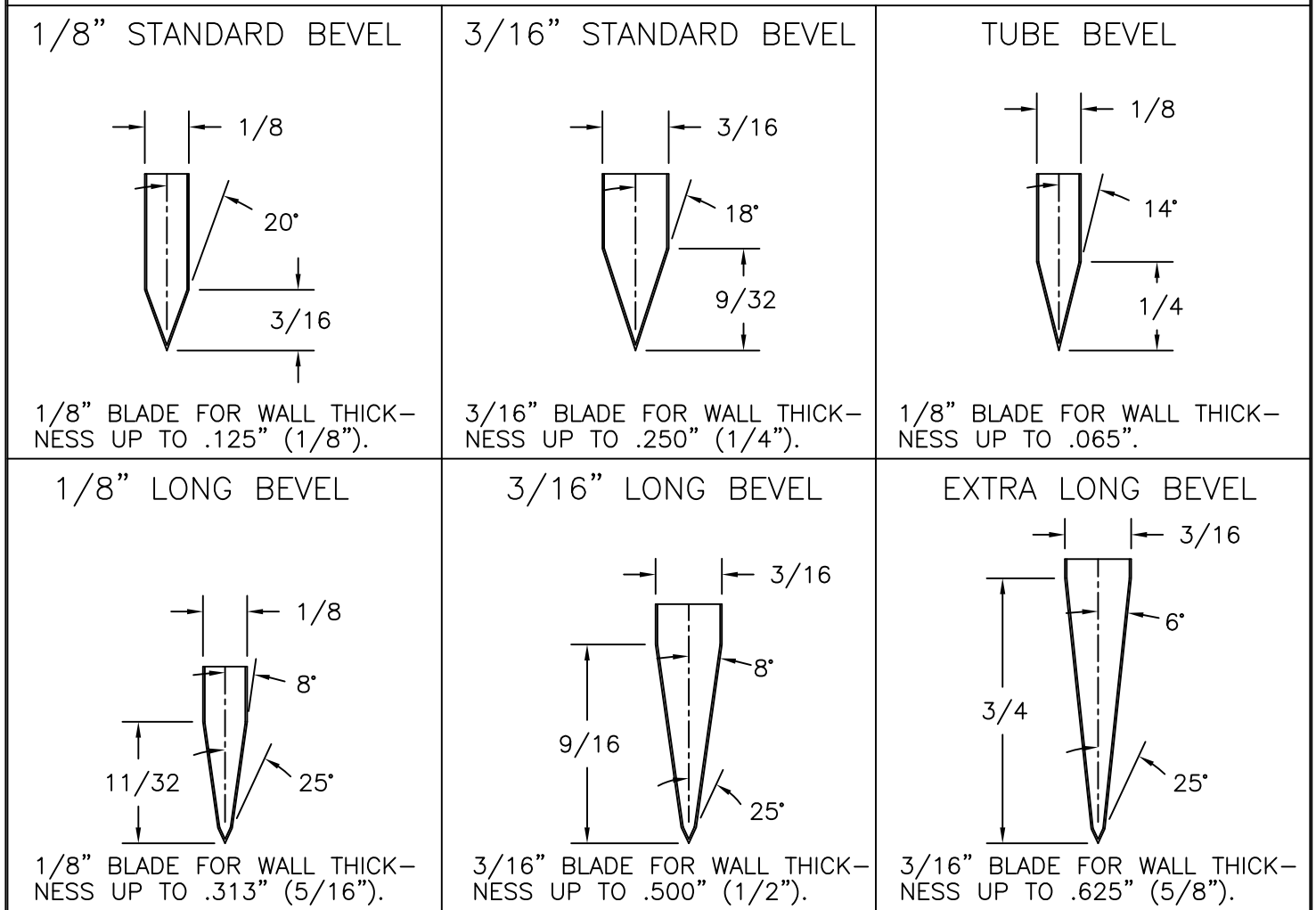


FIG. 2 — CONTINENTAL CUT-OFF BLADE MODELS

MODEL NO.	BORE (IN.)	THICKNESS (IN.)	DIA. (IN.)	BEVEL (SEE FIG. 1)	REMARKS
7170	1-7/16	1/8	7	STD.	FOR USE ON CONTINENTAL MODEL 2B, 2A, 3H, 3A, 6H, & 6A. NO PIN HOLES OR KEYWAYS.
7171	1-7/16	1/8	7	TUBE	
7172	1-7/16	1/8	7	LONG	
7370	1-7/16	3/16	7	STD.	
7372	1-7/16	3/16	7	LONG	
7373	1-7/16	3/16	7	EXTRA LONG	
7120	1-1/2	1/8	7	STD.	ONE (1) 13/32 DIA. PIN HOLE ON 1-1/8" RADIUS.
7121	1-1/2	1/8	7	TUBE	
7122	1-1/2	1/8	7	LONG	
7320	1-1/2	3/16	7	STD.	
7322	1-1/2	3/16	7	LONG	
7140	1-3/4	1/8	7	STD.	TWO (2) 13/32 DIA. PIN HOLES, ONE (1) ON 1-13/32" RADIUS, ONE (1) ON 1-29/64" RADIUS.
7340	1-3/4	3/16	7	STD.	
7342	1-3/4	3/16	7	LONG	
8140	1-3/4	1/8	8	STD.	
8340	1-3/4	3/16	8	STD.	

SECTION F. MAINTENANCE

This machine is completely adjusted and lubricated at the factory. Performing the following maintenance checks will assure trouble-free operation and a long service life. Use an N.L.G.I. #2 Lithium based, Extreme Pressure (EP) grease where indicated.

DAILY CHECKS

1. Fill Air Line Lubricator with Air Line Oil.
2. Drain water from the Air line Filter/Regulator.

NOTE: THESE TWO ITEMS ARE EXTREMELY IMPORTANT TO THE SERVICE LIFE OF THE AIR CYLINDER.

3. Lubricate the #5452 and #5453 upper and lower Wedge Blocks. A grease fitting is provided on the #5338 Fastening Pin. Use #2 EP Grease.
4. Lubricate Cutter Block Roll bearing. Use #2 EP Grease.

WEEKLY CHECKS

1. Lubricate front and rear Cutter Arm Bearings. Seven grease fittings are provided on the cutter arm. One (1) grease fitting is located at the back of the machine column. Use #2 EP Grease.
2. Lubricate #5506 Cam Roll. A grease fitting is provided in the #5339 Cam Roll Pin.
3. If equipped with Model #443 Standard Length Gauge, lubricate both pivot points for the #5515 Gauge Rod. Two grease fittings are provided, one on each side of the column. Use #2 EP Grease.
4. Check Air Line Lubricator to make sure it provides approximately one drop of oil for every 5 to 10 strokes of the Air Cylinder.

SIX MONTH CHECKS

1. Check drive belts for wear and tightness. Adjust accordingly. All belts should be tightened evenly.
2. Check fluid level in Hydrocheck Unit. The stem extending from small cylinder on the Hydrocheck should have three grooves visible. If not, the Hydrocheck fluid level is low. If the Hydrocheck requires service, see the following section for information.

4550 HYDROCHECK INFORMATION

DISMANTLING AND REASSEMBLING

Always use care in dismantling and reassembling the Hydrocheck to be sure cylinders, piston seals and piston rod seal are not damaged. Replace any damaged packings before reassembling.

SEAL KIT

Part number 4550-R1, Hydrocheck Seal Kit, contains parts subject to replacement through normal operation.

ADDING OIL

Before replacing filler valve, the main cylinder should be filled with ISO 32 hydraulic oil as follows:

1. Stand Hydrocheck upright with piston rod pointed downward and fully extended.
2. Slowly pour oil into cylinder until level with filler valve opening.
3. Move piston rod in and out slightly (1/16 to 1/8") to release any air trapped under piston assembly.
4. Keep Hydrocheck in upright position for a short while to allow air to escape.
5. Replace filler valve.
6. Use part number 4550-G, Oil Gun to bring hydraulic oil to proper level, indicated by grooves on Indicator Rod. Air must be bled from oil gun before filling Hydrocheck. Stand Oil Gun with nozzle pointing up. Cause oil to flow from nozzle until it runs clear of air bubbles.
7. Follow Air Bleeding Procedure to remove all traces of trapped air.

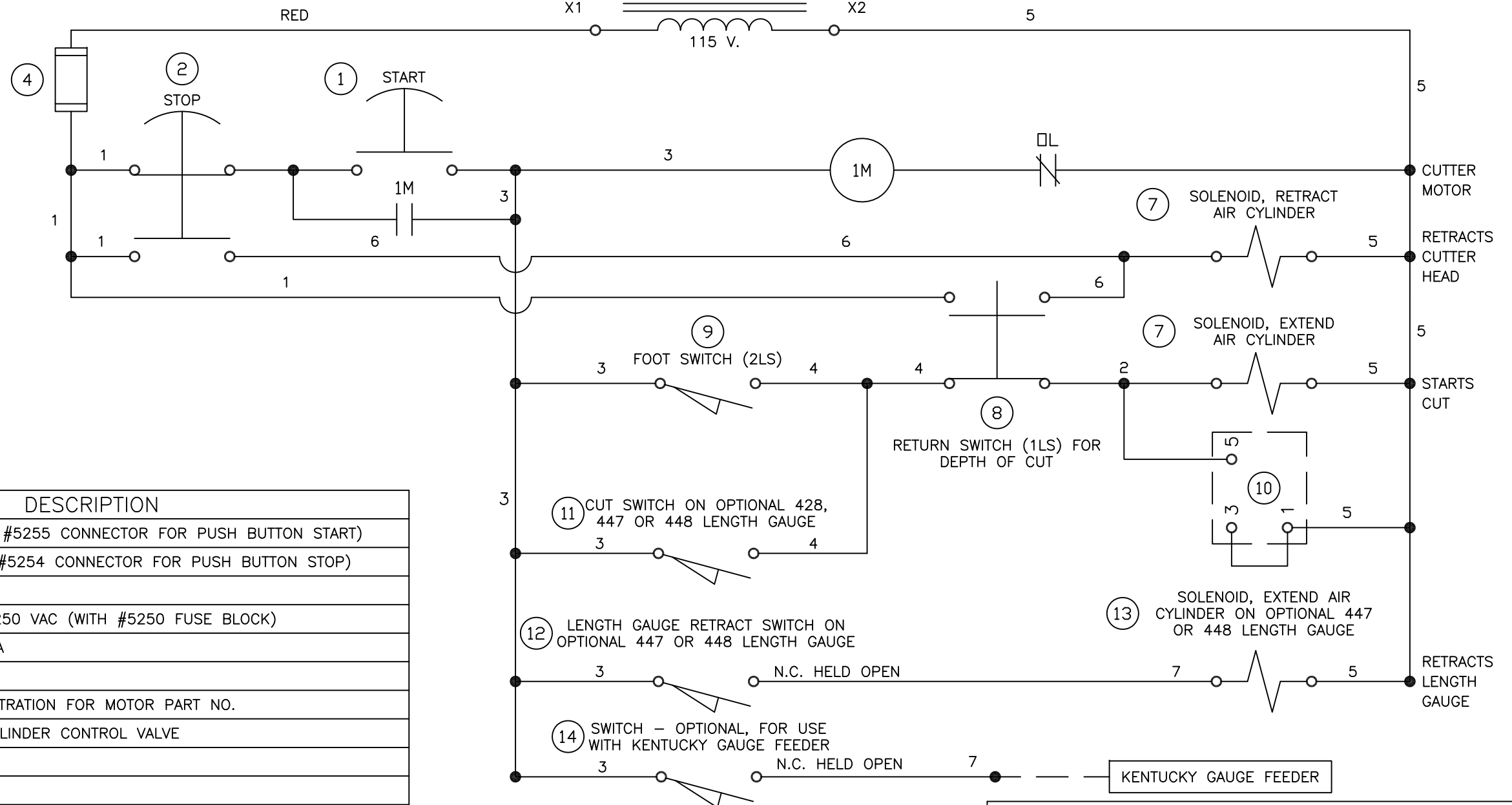
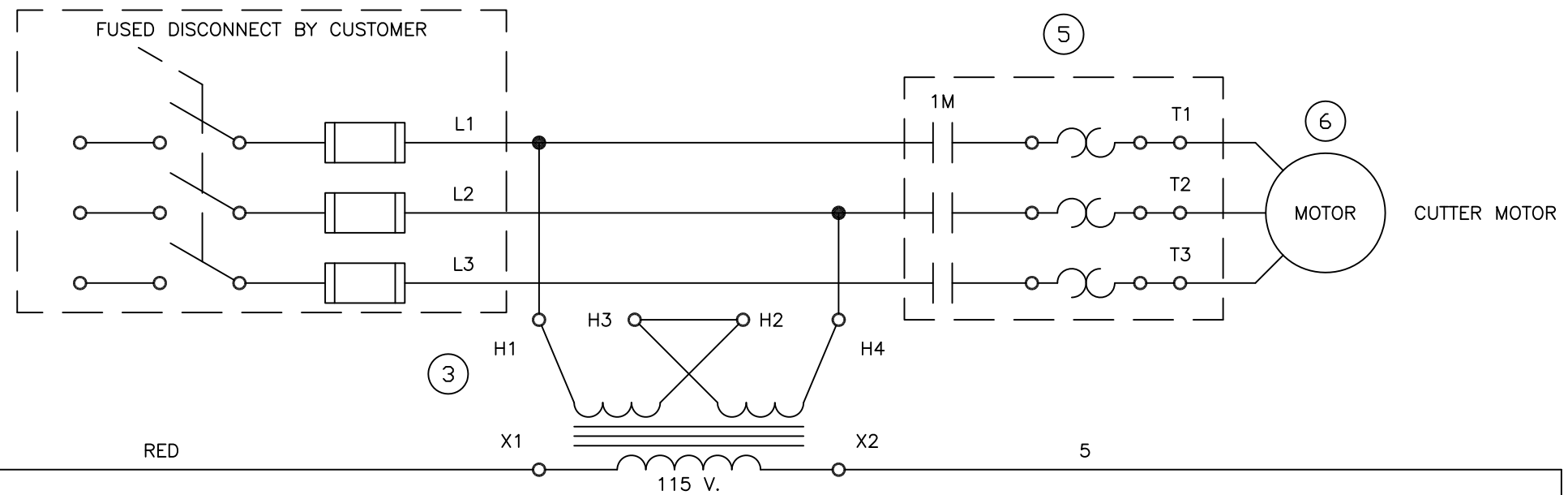
BLEEDING AIR FROM OIL

Retract Hydrocheck piston rod and hold retracted. Fill Hydrocheck until oil bleeds from small hole in balance cylinder. (Air must be bled from gun before filling Hydrocheck.) Slowly cycle piston rod. Stand Hydrocheck for a period of time with fill valve in highest position. Using a small rod (paper clip), open fill valve and allow air to bleed off. Fill again with bleed hole in balance cylinder in the highest position and with piston rod retracted. Allow a clear stream of oil to flow from small hole in balance cylinder. Using a small rod, release a quantity of oil from fill valve so Hydrocheck is not over-filled (third innermost groove on indicator rod flush with balance cylinder head with threaded rod retracted). Hydrocheck is now ready for use.

IRREGULAR CHECKING ACTION

The presence of air in the Hydrocheck will cause irregular checking action. Air can be detected by a spongy feel when pressing on the balance cylinder rod, or by the sound of air passing through needle valve when in operation. Follow Air Bleeding Procedure to remove all traces of trapped air.

SECTION G
WIRING DIAGRAM



ITEM	PART No.	DESCRIPTION
1	5247-1	PUSH BUTTON START (WITH #5255 CONNECTOR FOR PUSH BUTTON START)
2	5246-1	PUSH BUTTON STOP (WITH #5254 CONNECTOR FOR PUSH BUTTON STOP)
3	5228	TRANSFORMER
4	5251	NON-BUSS FUSE, 3 AMP, 250 VAC (WITH #5250 FUSE BLOCK)
5	5249	STARTER, MODEL 2A AND 3A
	5208	STARTER, MODEL 6A
6		MOTOR - SEE PARTS ILLUSTRATION FOR MOTOR PART NO.
7		SOLENOID AT #6207 AIR CYLINDER CONTROL VALVE
8	5224-1	SWITCH - DEPTH OF CUT
9	5243	FOOT SWITCH
10	6311	COUNTER
11	5211	CUT SWITCH ON OPTIONAL 428, 447 OR 448 LENGTH GAUGE
12	5224-1	LENGTH GAUGE RETRACT SWITCH ON OPTIONAL 447 OR 448 LENGTH GAUGE
13		SOLENOID AT #5807 AIR CYLINDER
14	5224-1	SWITCH - OPTIONAL, FOR USE WITH KENTUCKY GAUGE FEEDER

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A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
325 SOUTH FAIRBANKS STREET, ADDISON, ILLINOIS, 60101

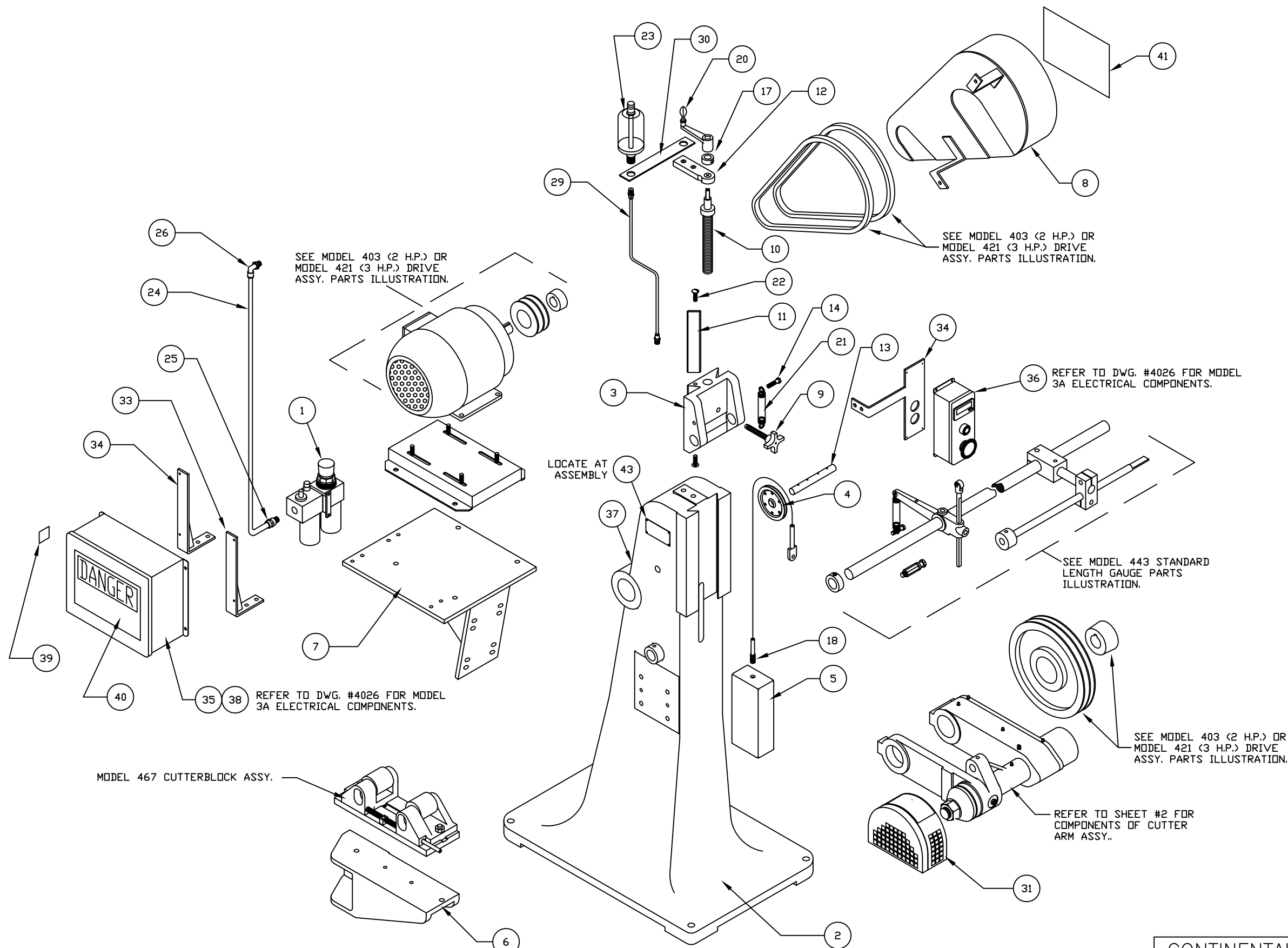
SCHMATIC WRING DIAGRAM FOR
MODEL 2A, 3A AND 6A CUT-OFF MACHINES

SECTION H

PARTS ILLUSTRATIONS

BILL OF MATERIALS

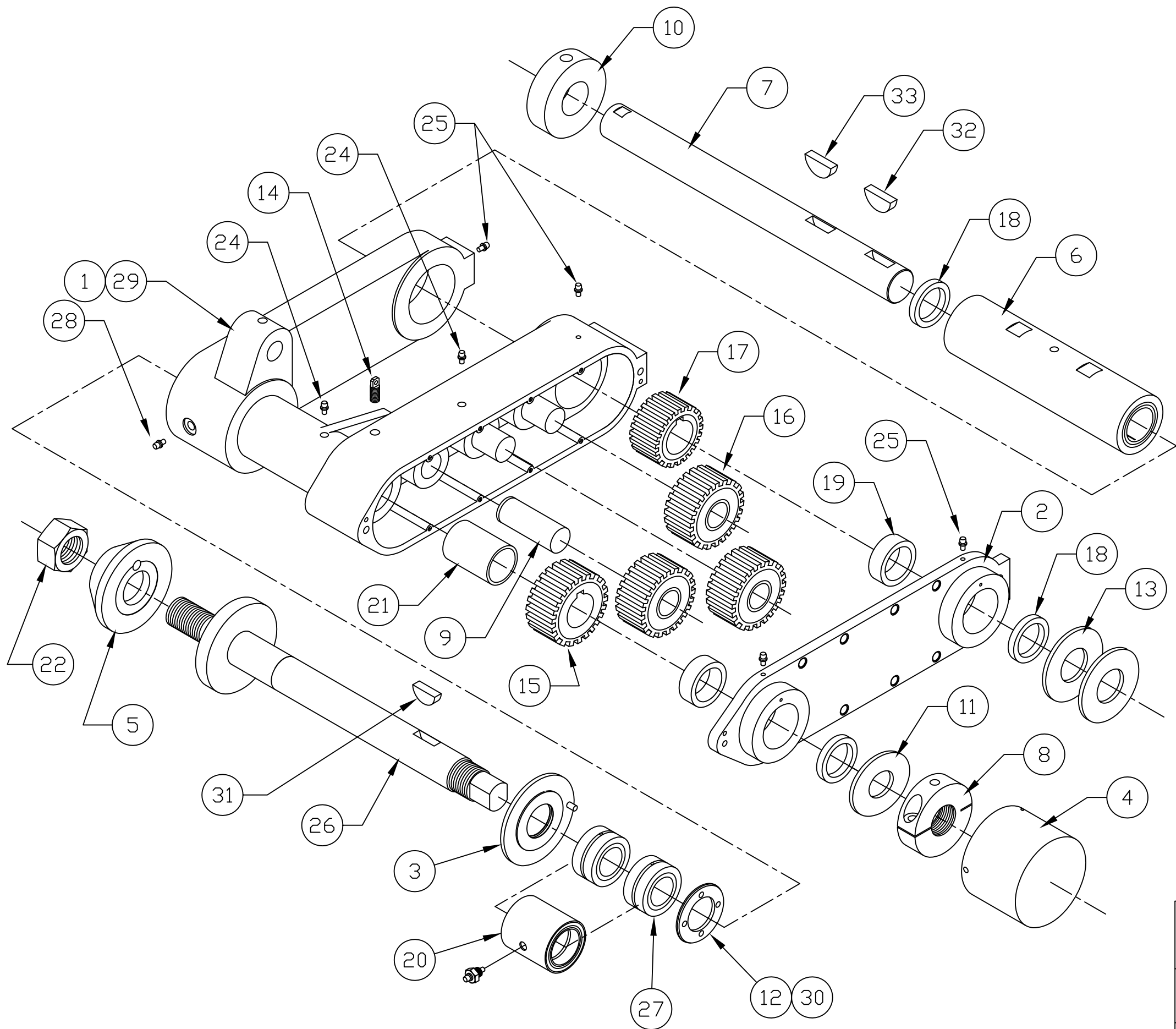
ITEM	PART NO.	DESCRIPTION	QTY.
1	4520	TRID CONTROL UNIT	1
2	5120	COLUMN	1
3	5123	CAM SLIDE	1
4	5124	COUNTERWEIGHT PULLEY	1
5	5125	COUNTERWEIGHT	1
6	5126	CUTTERBLOCK BRACKET	1
7	5128	MOTOR BRACKET	1
8	5277	V-BELT GUARD & COVER	1
9	5300	CAM SLIDE SET SCREW	1
10	5362	CAM SLIDE ADJ. SCR. & COLLAR	1
11	5407	CAM SLIDE GIB	1
12	5423	SLIDE SCREW PLATE	1
13	5424	COUNTERWEIGHT PULLEY SHAFT	1
14	201-64278	3/8-16 X 1-1/4 LG. HHCS, GR. 5	1
17	5465	CAM BRACKET SCREW COLLAR	1
18	5547	COUNTERWT. CABLE & CONNECTOR	1
19	5702*	WRENCH - CUTTERSHAFT NUT	1
20	5705	#4 HANDLE	1
21	5715	SPRING	1
22	5724	GIB SCREW	2
23	6304	FEED DILER	1
24	300-01139	TUBING, PNEUMATIC	5'
25	300-00793	CONNECTOR, PNEUMATIC	1
26	300-00904	ELBOW, SWIVEL, PNEUMATIC	1
29	6305	DILER HOSE & FITTINGS	1
30	5922	DILER BRACKET	1
31	5976 (1)	BLADE GUARD ASSY	1
32	5939-L	LH STARTER BOX BRACKET	1
33	5939-R	RH STARTER BOX BRACKET	1
34	6316	PUSH BUTTON BOX BRACKET	1
35	5225-1	STARTER & TERMINAL BOX	1
36	6315	COUNTER & PUSH-BUTTON BOX	1
37	5868	GREASE FITTING, STRAIGHT	1
38	5225-2	PANEL, TERMINAL BOX	1
39	5875	TAG, ELECTRICAL CHARACTERISTICS	1
40	5878	TAG, DANGER	1
41	5877	TAG, CAUTION	1
* 42	5243	FOOT SWITCH	1
43	5961	NAMEPLATE, SERIAL NUMBER	1



(*) ITEM NOT ILLUSTRATED.
 NOTE APPLICATION:
 (1) FIRST USED ON MACHINE WITH S/N 3X-31707.

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 3A, SHEET 1 OF 3



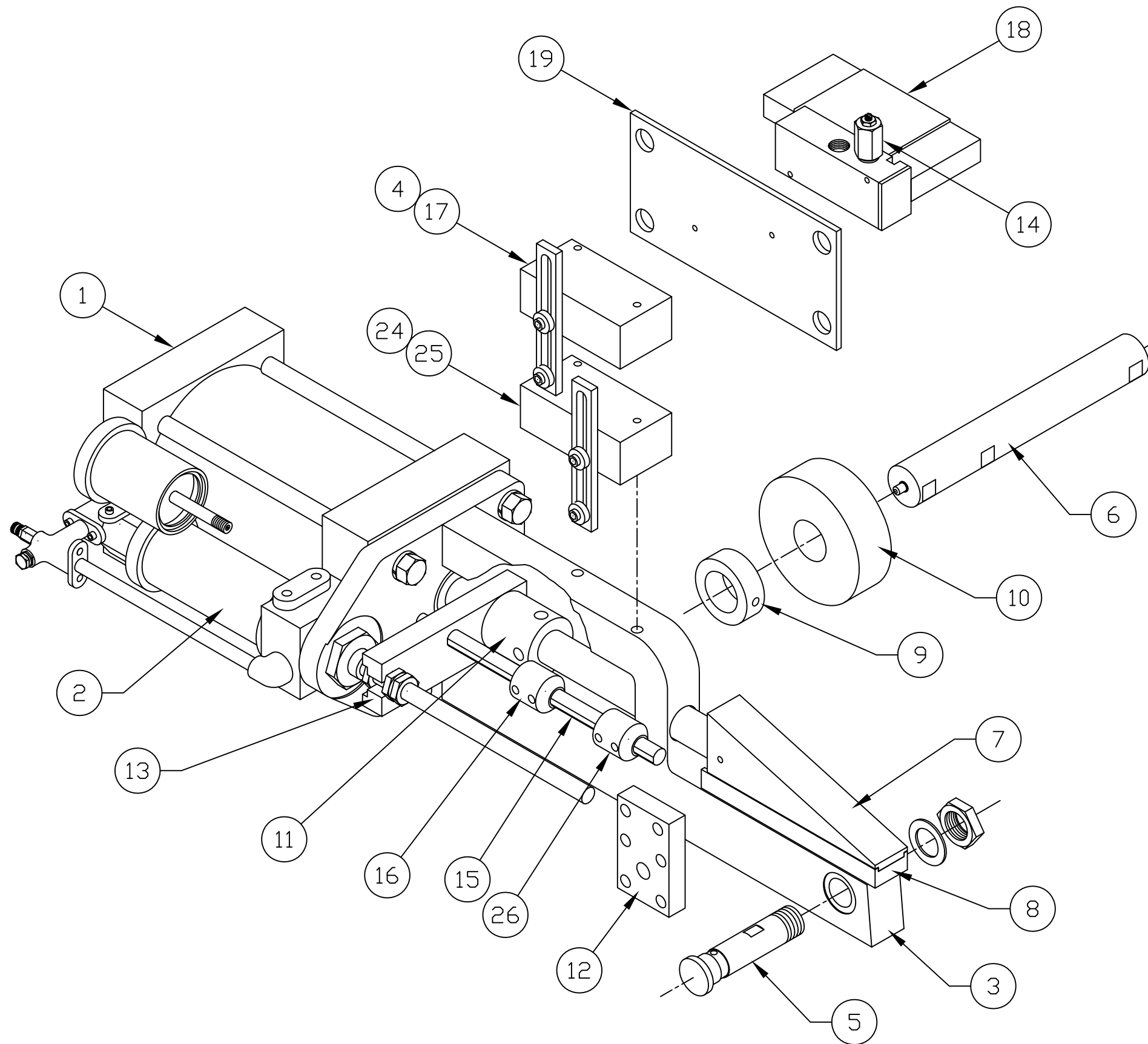
BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY.	
1	5121 (1)	CUTTER ARM	1	
2	5122	GEAR CASE COVER	1	
3	5130	CUTTERSHAFT THRUST WASHER	1	
4	5293	SPLIT COLLAR GUARD	1	
5	5306	CUTTERSHAFT CLAMP COLLAR	1	
6	5328	DRIVE SHAFT SLEEVE	1	
7	5329	DRIVE SHAFT	1	
8	5330	CUTTERSHAFT SPLIT COLLAR	1	
9	5342	IDLER GEAR STUD	3	
10	5392	DRIVE SHAFT COLLAR	1	
11	5433	THRUST WASHER	1	
*	12	5454 (1)	ROLLER BEARING WASHER	1
13	5456	SHEAVE SPACER	2	
14	5542	SPRING SCREW	1	
15	5600	CUTTER DRIVE GEAR	1	
16	5601A	IDLER GEAR ASSY.	3	
17	5602	DRIVE GEAR	1	
18	5611	GREASE SEAL	3	
19	5640	GEAR CASE COVER BUSHING	2	
*	20	5641 (1)	CUTTERSHAFT BEARING ASSY.	1
21	5642	CUTTERSHAFT BUSHING	1	
22	5723	HEX CUTTERSHAFT NUT	1	
24	5855	GREASE FITTING, STRAIGHT, RELIEF	2	
25	300-01129	GREASE FITTING, DRIVE	4	
26		CUTTERSHAFT - SEE BELOW	1	
	5331	CUTTERSHAFT (1-7/16 DIA.)		
	5352	CUTTERSHAFT (1-1/2 DIA.)		
*	27	5641-2 (2)	CUTTERSHAFT BEARING	2
*	28	5868 (2)	GREASE FITTING, STRAIGHT	1
*	29	5121-1 (2)	CUTTER ARM	1
*	30	5874 (2)	ROLLER BEARING WASHER	1
31	5872	WOODRUFF KEY	1	
32	5873	WOODRUFF KEY	1	
33	6303	WOODRUFF KEY	1	

* **NOTE APPLICATION:**
 (1) USED ON MACHINES WITH SERIAL NUMBER 3X-31674 AND BEFORE;
 (2) USED ON MACHINES AFTER SERIAL NUMBER 3X-31674;

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 3A, SHEET 2 OF 3



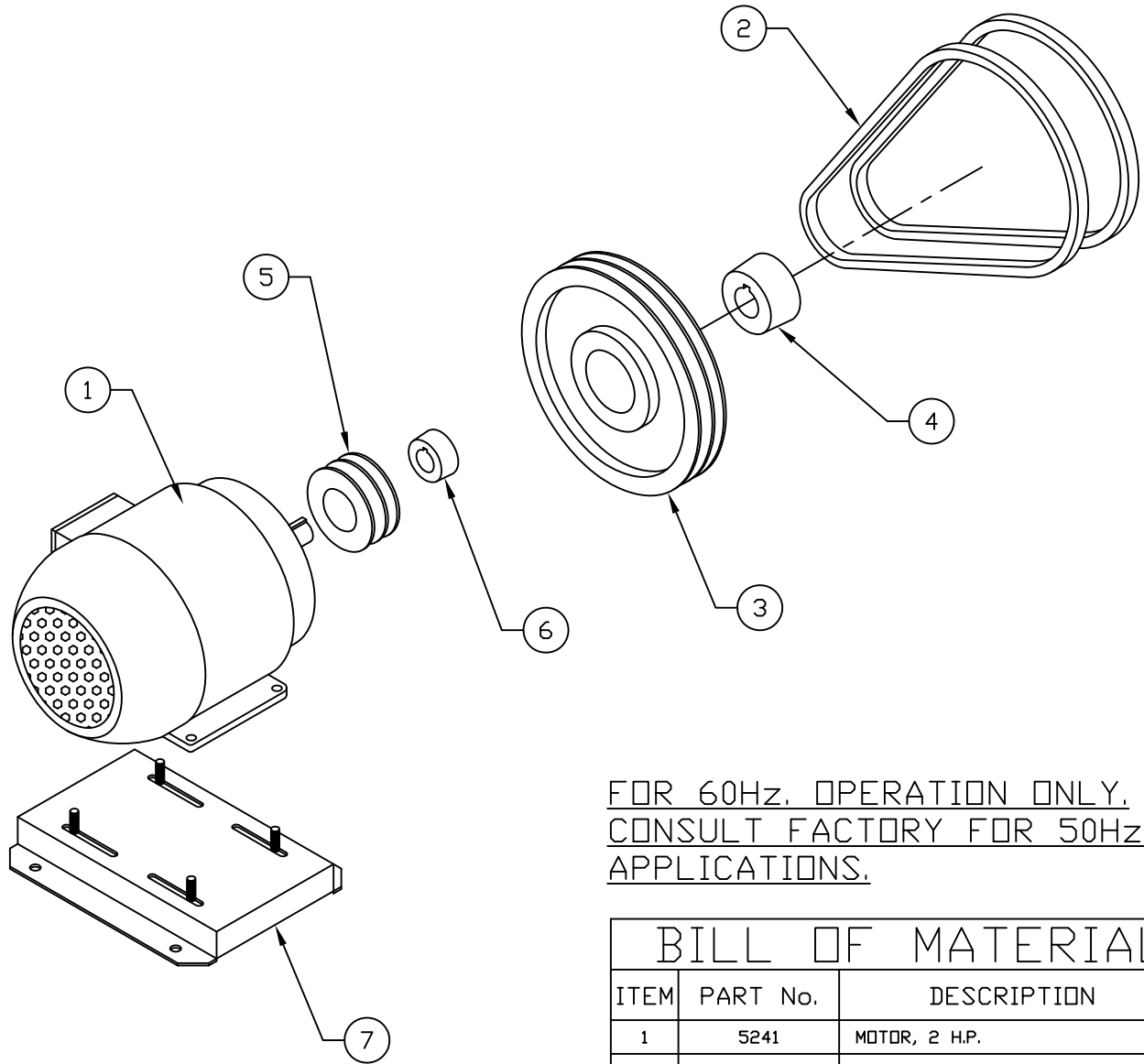
BILL OF MATERIALS			
ITEM	PART NO.	DESCRIPTION	QTY.
1	6209	AIR CYLINDER	1
2	4550	HYDROCHECK	1
3	5105	AIR CYLINDER BRACKET	1
4	5224-1	SWITCH - DEPTH OF CUT	1
5	5338	FASTENING PIN	1
6	5339	CAM ROLL PIN	1
7	5452	UPPER WEDGE BLOCK	1
8	5453	LOWER WEDGE BLOCK	1
9	5458	CAM COLLAR	1
10	5506	CAM ROLL	1
11	5507	ROD EXTENSION	1
12	5530	ALIGNMENT BRACKET	1
13	5822	TRIP ACTUATING BRACKET	1
14	6208	EXHAUST MUFFLER/SPEED CONTROL	1
15	5850	LIMIT SWITCH CAM POST	1
16	5851	LIMIT SWITCH CAM	1
17	5224-2	ARM, SWITCH	1
18	6207	CONTROL VALVE	1
19	6210	MOUNTING PLATE, CONTROL VALVE	1
20			
21			
22			
23	4550-R1*	HYDROCHECK SEAL KIT	
24	5224-1	SWITCH - LENGTH GAUGE RETRACT OR KENTUCKY GAUGE FUNCTION	1
25	5224-2	ARM, SWITCH - LENGTH GAUGE RE- TRACT OR KENTUCKY GAUGE FUNCTION	1
26	5851	LIMIT SWITCH CAM - LENGTH GAUGE RETRACT OR KENTUCKY GAUGE FUNCTION	1

(*) ITEM NOT ILLUSTRATED.

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 3A, SHEET 3 OF 3

CURRENT REVISION: H FILE NAME: PI3A-3 DRAWING NUMBER: PI3A-SHT 3



FOR 60Hz. OPERATION ONLY.
CONSULT FACTORY FOR 50Hz.
APPLICATIONS.

BILL OF MATERIALS

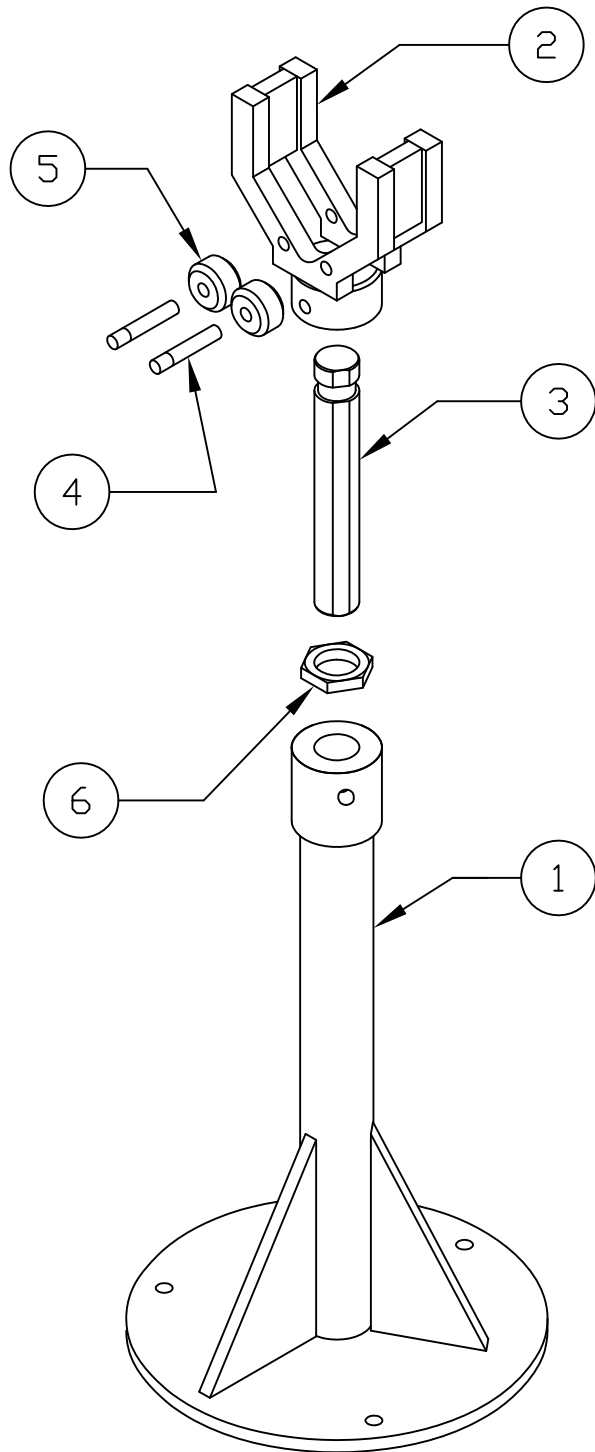
ITEM	PART No.	DESCRIPTION	QTY.
1	5241	MOTOR, 2 H.P.	1
2	5743	V-BELTS	2
3	5747	SHEAVE (DRIVE SHAFT)	1
4	5748	BUSHING, TAPERLOCK (DRIVE SFT.)	1
5	5749	SHEAVE (MOTOR)	1
6	5750	BUSHING, TAPERLOCK (MOTOR)	1
7	5241-1	MOTOR SLIDE BASE	1
8	5993	THERMAL OVERLOAD RELAY	3

NOT SHOWN

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 403, 2 HP DRIVE ASSEMBLY

CURRENT REVISION: C FILE NAME: P1403 DRAWING NUMBER: PI 403



NOTE: ITEMS MARKED (*) ARE NOT ILLUSTRATED; ITEMS ARE INCLUDED WITH PIPE SUPPORT.

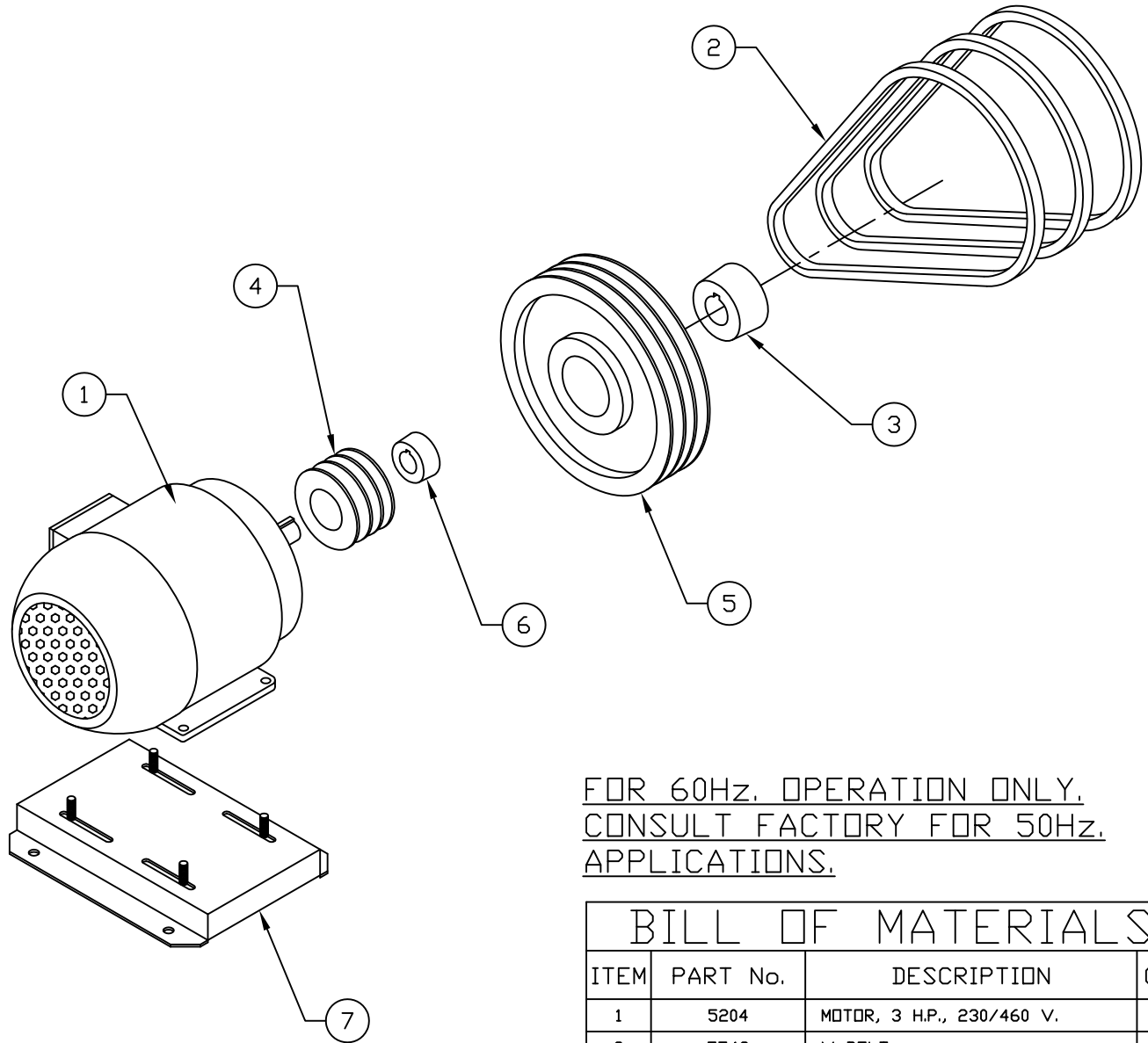
BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY.
1	5103	SUPPORT STAND	1
2	5108	PIPE SUPPORT FORK	1
3	5340	PIPE SUPPORT STUD	1
4	5378	PIPE SUPPORT ROLL PIN	2
5	5379	PIPE SUPPORT ROLL	2
6	5845	HEX JAM NUT	1
*	7	201-64418 1/2-13 X 1 1/4 HEX HD CAP SCREW	1
*	8	201-64532 5/8-11 X 1' HEX HD CAP SCREW	1

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 414 PIPE SUPPORT

CURRENT REVISION: * FILE NAME: PI414 DRAWING NUMBER: PI414



FOR 60Hz. OPERATION ONLY.
CONSULT FACTORY FOR 50Hz.
APPLICATIONS.

BILL OF MATERIALS

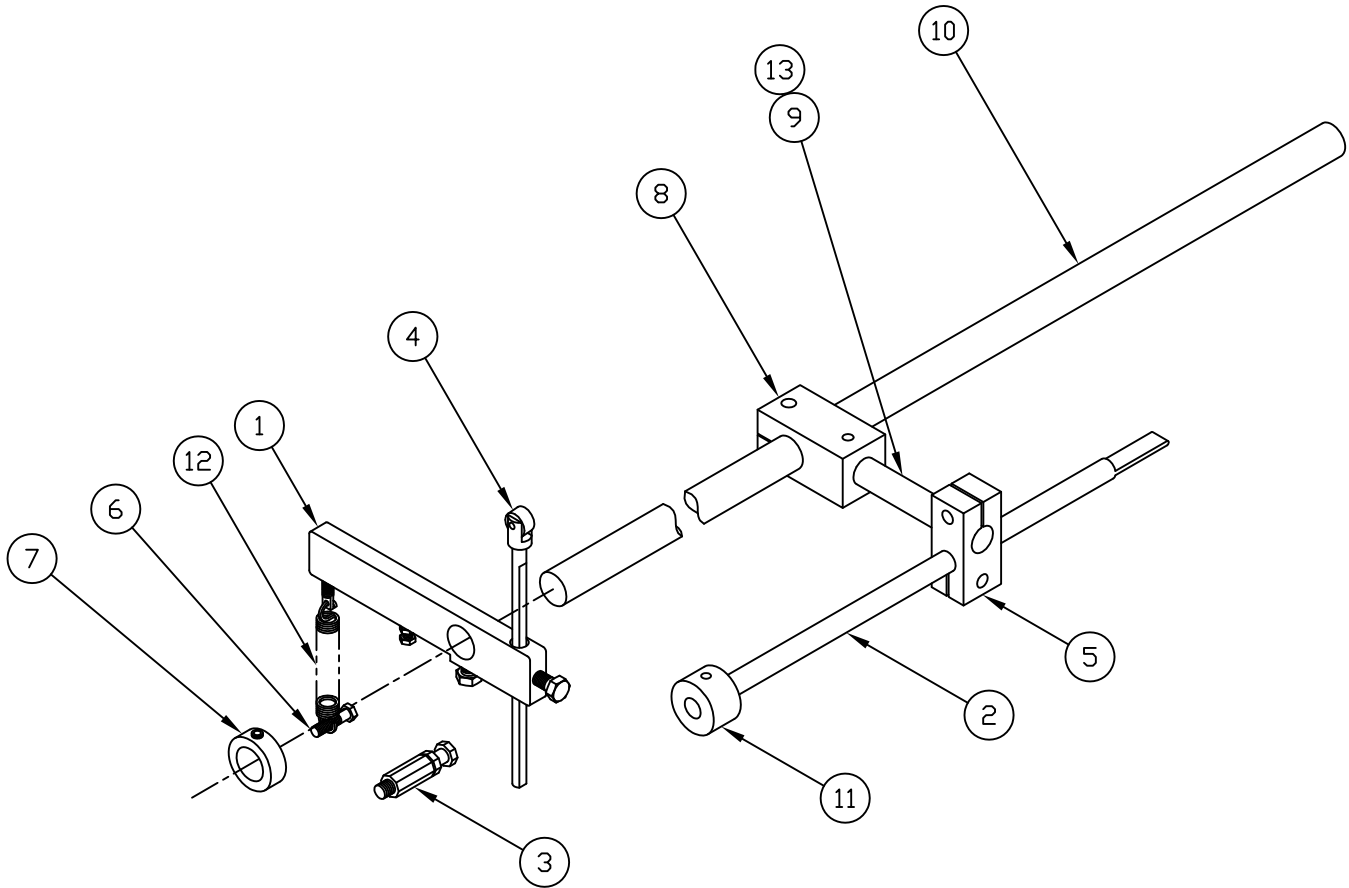
ITEM	PART No.	DESCRIPTION	QTY.
1	5204	MOTOR, 3 H.P., 230/460 V.	1
2	5743	V-BELT	3
3	5748	BUSHING, TAPERLOCK (DRIVE SFT.)	1
4	5762	SHEAVE (MOTOR)	1
5	5763	SHEAVE (DRIVE SHAFT)	1
6	5768	BUSHING, QD (MOTOR)	1
7	5204-1	MOTOR SLIDE BASE	1
8	5993	THERMAL OVERLOAD RELAY	3

NOT SHOWN

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 421, 3 HP DRIVE ASSEMBLY

CURRENT REVISION: C FILE NAME: PI421 DRAWING NUMBER: PI 421



NOTES:

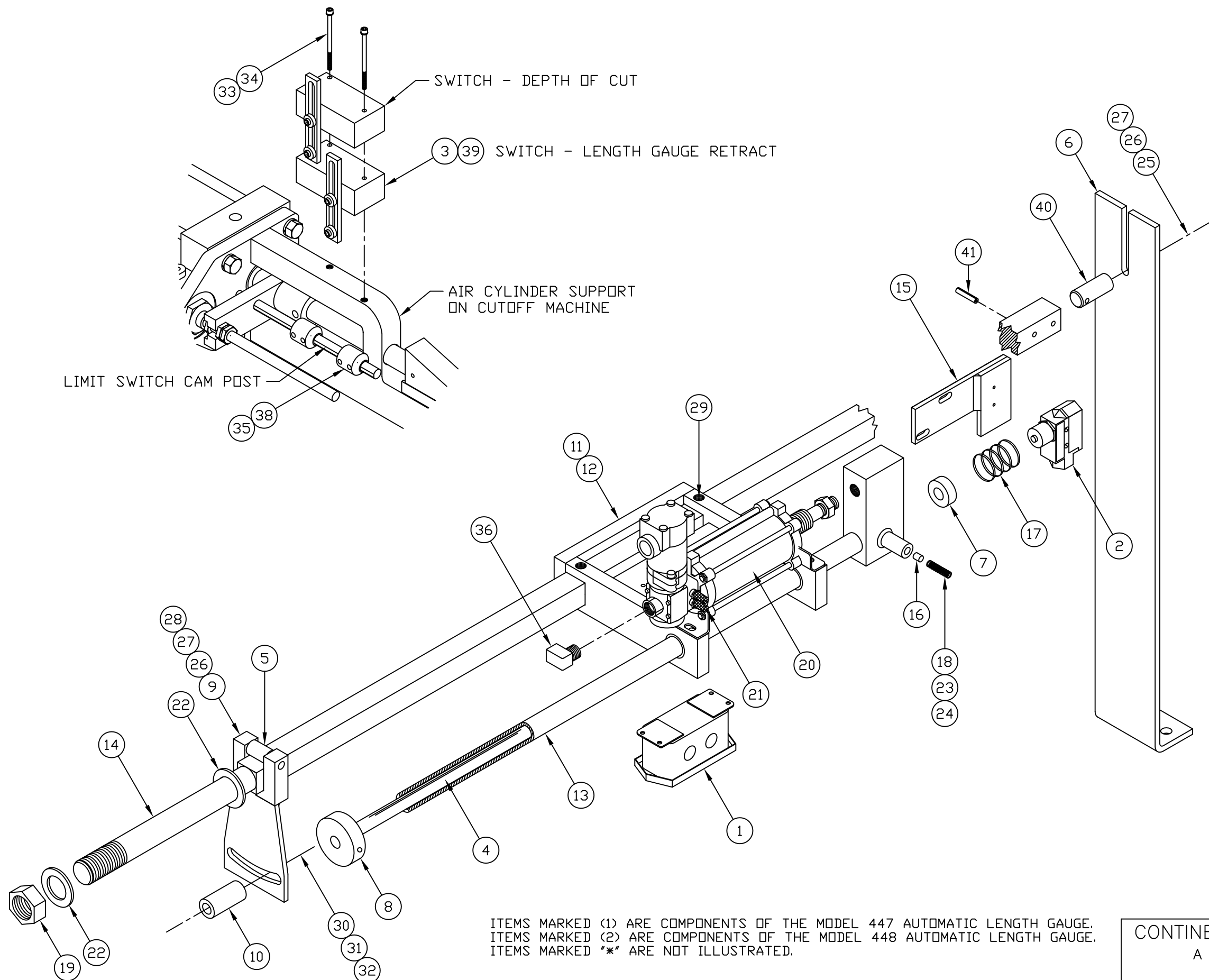
1. ITEM 9 IS A COMPONENT OF THE MODEL 443 LENGTH GAUGE ASSEMBLY.
2. ITEM 13 IS A COMPONENT OF THE MODEL 444 LENGTH GAUGE ASSEMBLY.
3. INSTALL GREASE FITTINGS, ITEM 14 IN THE MACHINE COLUMN.

BILL OF MATERIALS			
ITEM	PART NO.	DESCRIPTION	QTY.
1	5100	GAUGE LEVER	1
2	5354	GAUGE PIN	1
3	5410	GAUGE LEVER STOP	1
4	5425	GAUGE LEVER BAR, PIN & ROLL	1
5	5439	GAUGE SUPPORT, FRONT	1
6	5444	GAUGE LEVER PIN	1
7	5458	GAUGE ROD COLLAR	1
8	5485	GAUGE SUPPORT, BACK	1
9	5508	GAUGE BRACKET BAR	1
10	5515	GAUGE ROD	1
11	5516	HARDENED PIPE STOP	1
12	5715	SPRING	1
13	5372	GAUGE BRACKET BAR	1
14	5869	1/8NPT 65° GREASE FITTING, NO RELIEF	2
	NOT SHOWN		

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 443 & 444 STANDARD LENGTH GAUGE ASSEMBLY

CURRENT REVISION: D FILE NAME: PI443-44 DRAWING NUMBER: PI 443/444



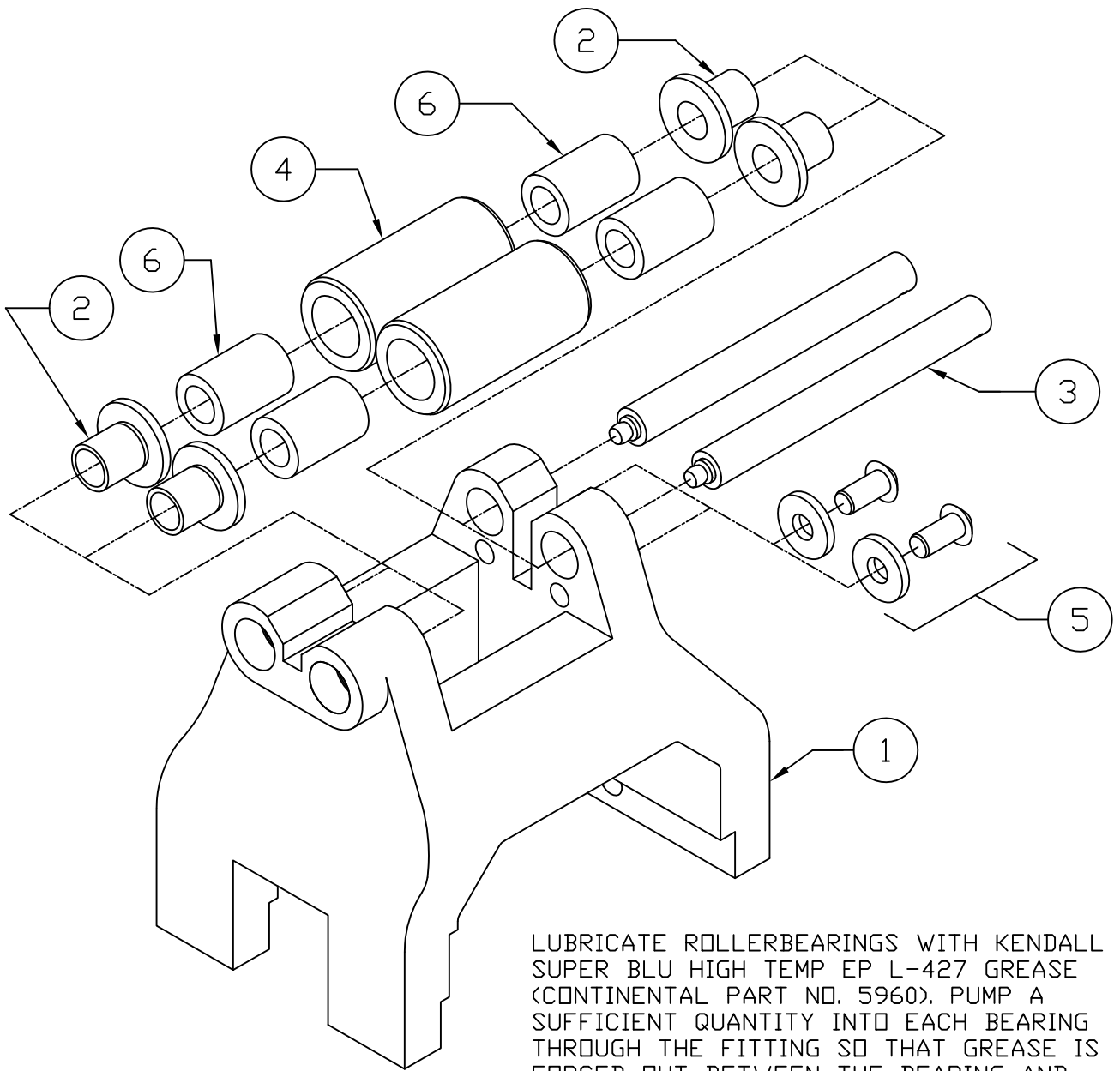
ITEMS MARKED (1) ARE COMPONENTS OF THE MODEL 447 AUTOMATIC LENGTH GAUGE.
 ITEMS MARKED (2) ARE COMPONENTS OF THE MODEL 448 AUTOMATIC LENGTH GAUGE.
 ITEMS MARKED "*" ARE NOT ILLUSTRATED.

BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY.
1	5210	JUNCTION BOX	1
2	5211	AUTOMATIC LENGTH GAUGE SWITCH	1
3	5224-1	SWITCH - LENGTH GAUGE RETRACT	1
4	5337	GAUGE PIN	1
5	5350	BOLT SPACER	1
6	5358	GAUGE BAR SUPPORT	1
7	5393	GAUGE PIN COLLAR	1
8	5447	GAUGE STOP	1
9	5448	PIVOT BRACKET	1
10	5449	SPACER	1
11	5499 (1)	#3 AIR CYLINDER BRACKET	1
12	5498 (2)	#6 AIR CYLINDER BRACKET	1
13	5500	GAUGE PIN HOLDER AND BLOCK	1
14	5998	GAUGE BAR	1
15	5592	SWITCH MOUNTING BRACKET	1
16	5593	STOP PLUNGER	1
17	5659	RETURN SPRING	1
18	5712	GAUGE STOP SPRING	1
19	5719	1 1/4-7 JAM NUT	1
20	5807	AIR CYLINDER	1
21	5846	MUFFLER	2
22	5982	BUSHING, GAUGE BAR	2
23	213-64277*	3/8-16 X 1 HEX SDC CUP PT SET SCR	1
24	203-63305*	3/8-16 HEX JAM NUT	1
25	201-64278*	3/8-16 X 1 1/4 HEX HD CAP SCR	1
26	207-61024*	3/8 SPLIT LOCK WASHER	2
27	206-61024*	3/8 SAE WASHER	2
28	201-64284*	3/8-16 X 2 3/4 HEX HD CAP SCR	1
29	201-64417*	1/2-13 X 1 HEX HD CAP SCR	2
30	201-64425*	1/2-13 X 3 HEX HD CAP SCR	1
31	207-61028*	1/2 SPLIT LOCK WASHER	1
32	206-61028*	1/2 SAE WASHER	1
33	210-62072	#10-32 X 3-1/2 SDC HD CAP SCR	2
34	244-61009	#10 HIGH-COLLAR SPLIT LOCK WASHER	2
35	214-61128*	1/4-20 X 1/4 SDC SET SCR, BRASS TIP	2
36	300-00875	STREET ELBDW	1
37	5847*	STREET TEE	1
38	5851	LIMIT SWITCH CAM	1
39	5224-2	ARM, SWITCH	1
40	5502-3	THREADED PLUG	1
41	220-62138	SPRING ROLL PIN	1
42	5807-R1*	AIR CYLINDER SERVICE KIT	
43	5807-R2*	AIR CYLINDER VALVE SERVICE KIT	
44	5807-R3*	AIR CYLINDER VALVE SERVICE KIT	
45	INSTRUCTIONS 447* (1)	MODEL 447 INSTRUCTIONS	1
46	INSTRUCTIONS 448* (2)	MODEL 448 INSTRUCTIONS	1

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 447 & 448 AUTOMATIC LENGTH GAUGE ASSEMBLIES



LUBRICATE ROLLERBEARINGS WITH KENDALL SUPER BLU HIGH TEMP EP L-427 GREASE (CONTINENTAL PART NO. 5960). PUMP A SUFFICIENT QUANTITY INTO EACH BEARING THROUGH THE FITTING SO THAT GREASE IS FORCED OUT BETWEEN THE BEARING AND CUTTER BLOCK ROLL. REMOVE EXCESS GREASE.

NOTE:

- 1. THIS CUTTERBLOCK ASSEMBLY IS FOR USE WITH A MODEL 467 OR 468 CUTTERBLOCK ASSEMBLY.
- 2. ITEMS MARKED (*) ARE NOT ILLUSTRATED. ITEMS ARE INCLUDED WITH ASSEMBLY.

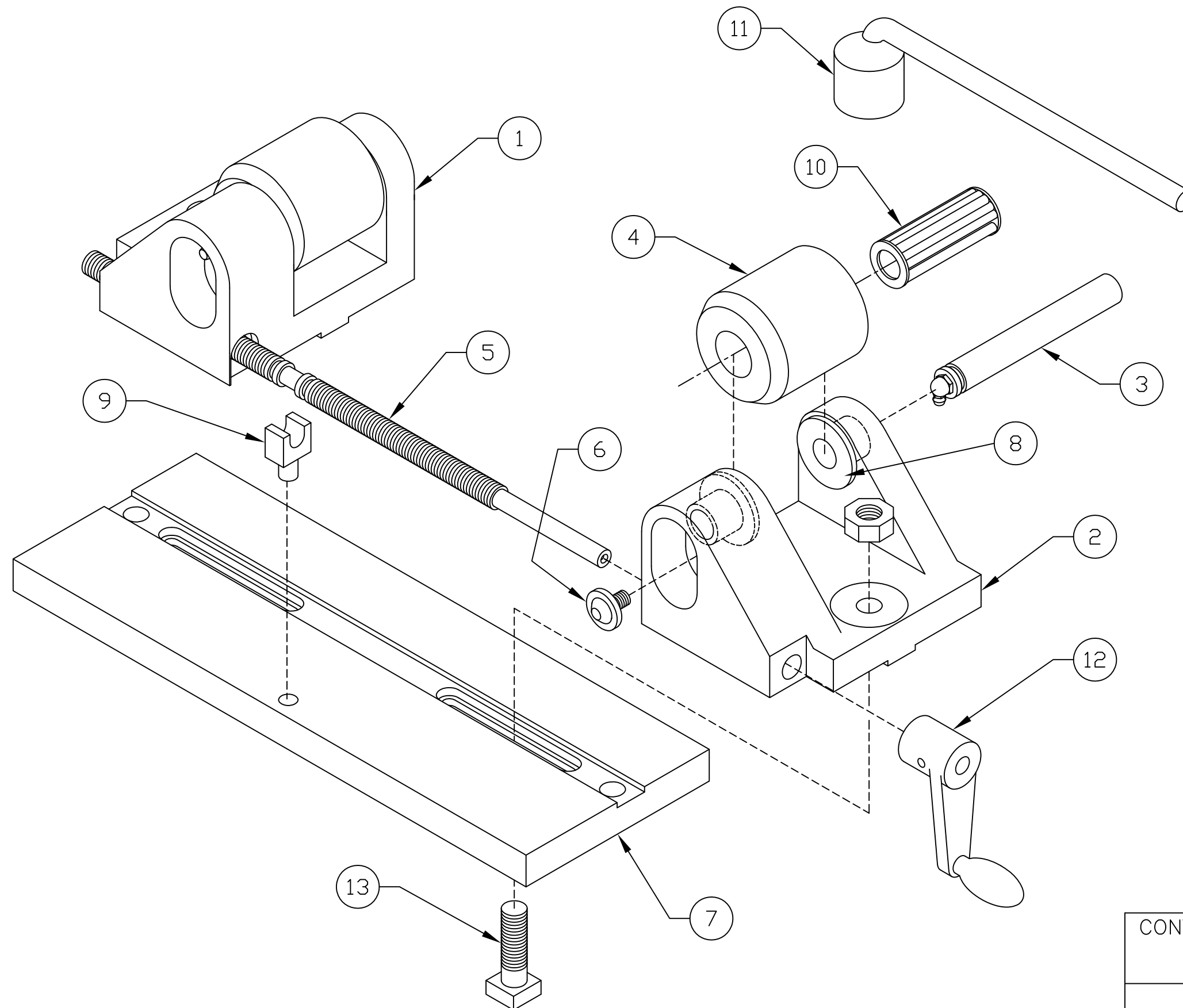
BILL OF MATERIALS			
ITEM	PART NO.	DESCRIPTION	QTY.
1	5148	STATIONARY CUTTER BLOCK	1
2	5313	CUTTER BLOCK ROLL PIN BUSHING	4
3	5314	CUTTER BLOCK ROLL PIN	2
4	5315	CUTTER BLOCK ROLL	2
5	5361	CUTTER BLOCK PIN CLAMP SCREW	2
6	5615	CUTTER BLOCK ROLLERBEARING	4
*	7	201-64275 3/8-16 X 3/4 HEX HD CAP SCREW	1

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 465 CUTTERBLOCK ASSEMBLY

BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY.
1	5129-L	CUTTER BLOCK, LH	1
2	5129-R	CUTTER BLOCK, RH	1
3	5311	CUTTER BLOCK ROLL PIN	2
4	5312	CUTTER BLOCK ROLL	2
5	5359	CUTTER BLOCK ADJUSTING SCR	1
6	5361	CUTTER BLOCK PIN CLAMP SCR	2
7	5363	CUTTER BLOCK BASE PLATE	1
8	5395	CUTTER BLOCK ROLL PIN BUSHING	4
9	5408	ADJUSTING SCR STUD	1
10	5616	CUTTER BLOCK ROLLER BEARING	2
11	5701	CUTTER BLOCK WRENCH	1
12	5703	HANDLE, #00	1
13	5725	SQ HD BOLT & HVY HEX NUT	2

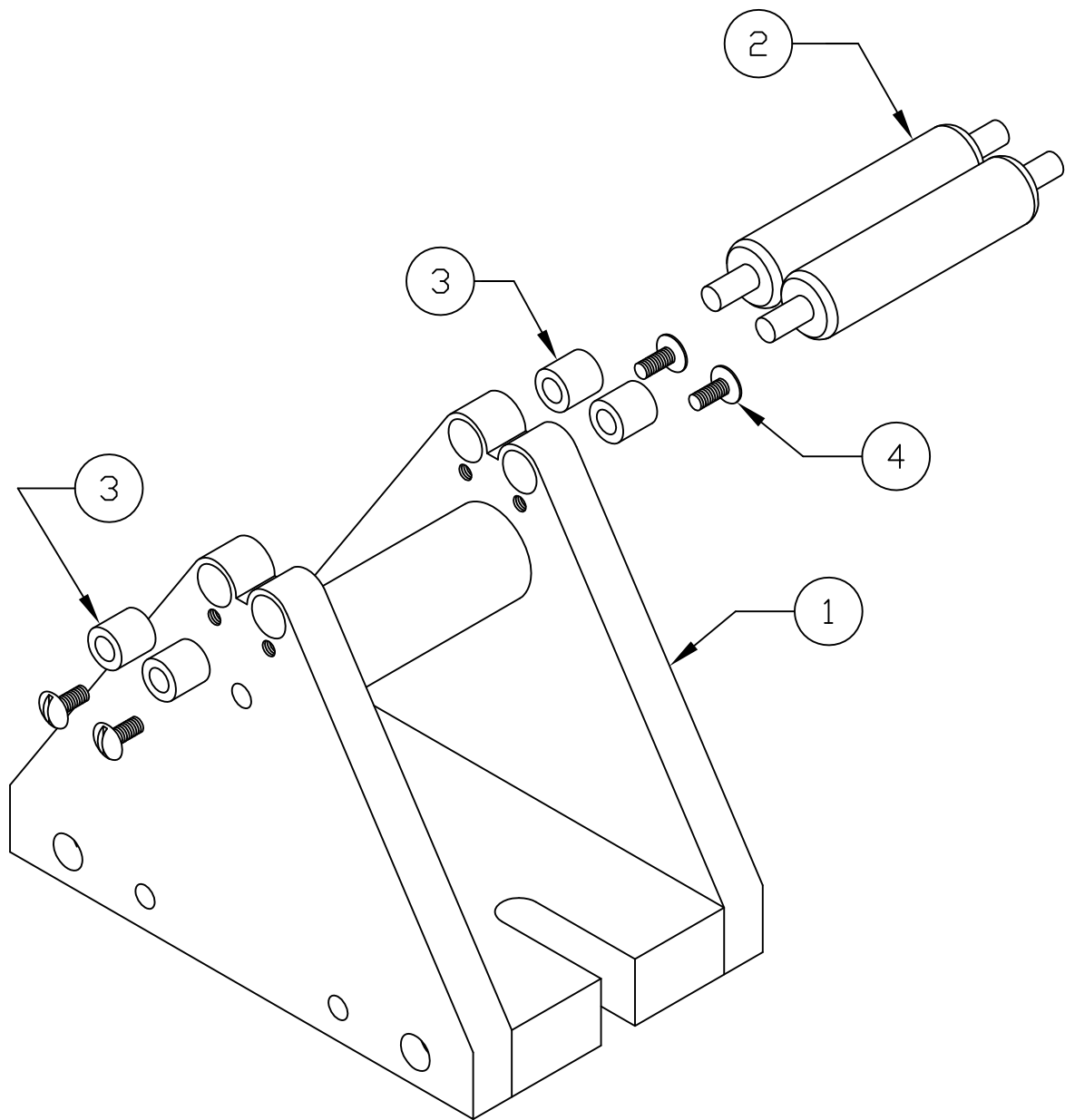


LUBRICATE ROLLERBEARINGS WITH KENDALL SUPER BLU HIGH TEMP EP L-427 GREASE (CONTINENTAL PART NO. 5960). PUMP A SUFFICIENT QUANTITY INTO EACH BEARING THROUGH THE FITTING SO THAT GREASE IS FORCED OUT BETWEEN THE BEARING AND CUTTER BLOCK ROLL. REMOVE EXCESS GREASE.

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 467 CUTTERBLOCK ASSEMBLY

CURRENT REVISION: B FILE NAME: PI467 DRAWING NUMBER: PI 467



PACK BEARINGS WITH KENDALL SUPER BLU HIGH TEMP EP L-427 GREASE (CONTINENTAL PART NO. 5960). REMOVE EXCESS GREASE.

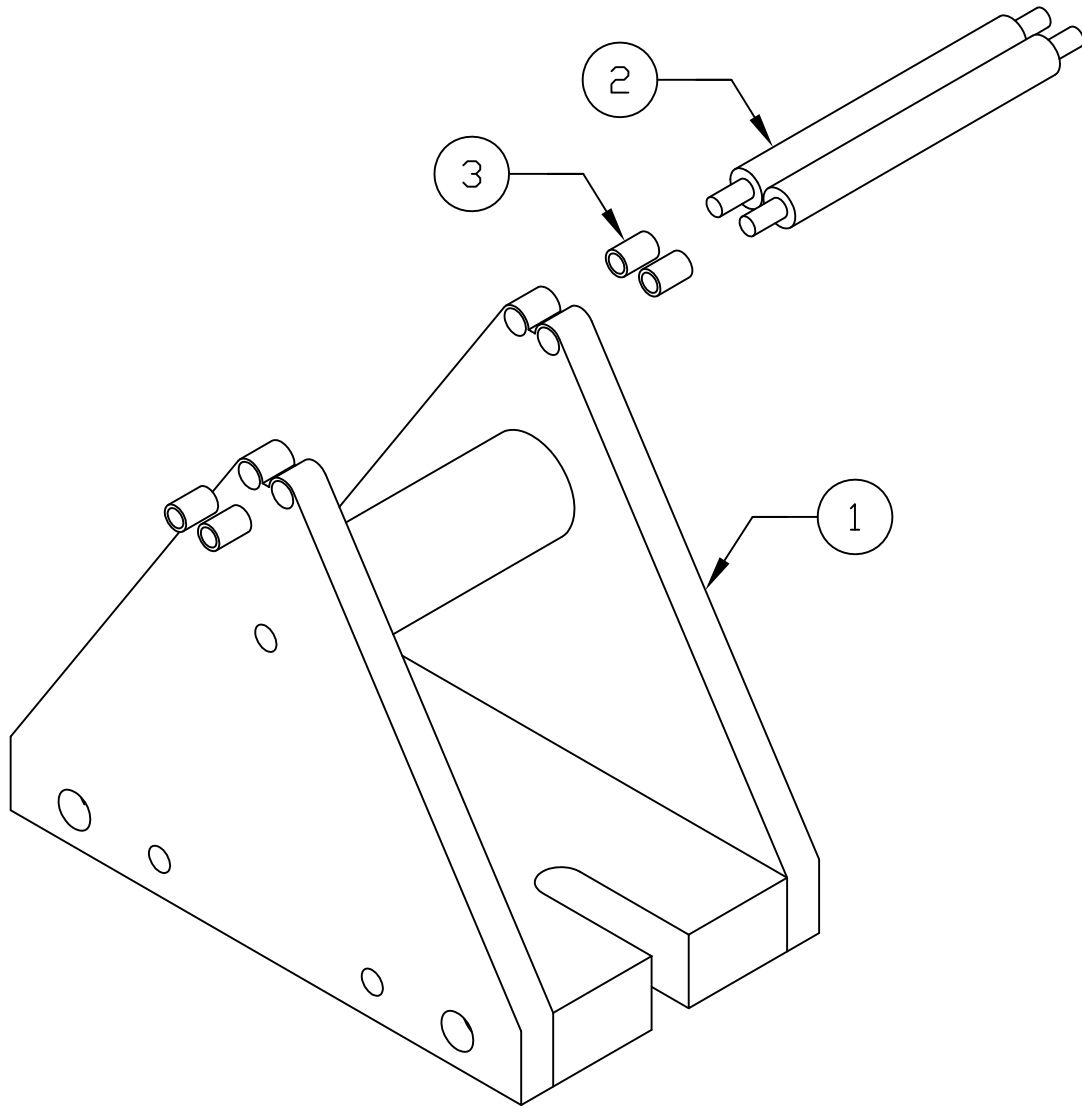
BILL OF MATERIALS

ITEM	PART NO.	DESCRIPTION	QTY.
1	5569	CUTTER BLOCK	1
2	5307	CUTTER BLOCK ROLL	2
3	5614	BEARING	4
4	224-63030	#8-32 X 3/8 TRUSS HEAD SCREW	4

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 492 CUTTERBLOCK ASSEMBLY

CURRENT REVISION: A FILE NAME: P1492 DRAWING NUMBER: PI 492



BILL OF MATERIALS			
ITEM PART NO.		DESCRIPTION	QTY.
1	5568	CUTTER BLOCK	1
2	5310	CUTTER BLOCK ROLL	2
3	5971	BUSHING, CUTTER BLOCK ROLL	4

CONTINENTAL PIPE & TUBE CUT-OFF MACHINES
 A DIVISION OF KIENE DIESEL ACCESSORIES, INC.
 325 SOUTH FAIRBANK STREET - ADDISON, ILLINOIS 60101

PARTS ILLUSTRATION
 MODEL 493 CUTTERBLOCK ASSEMBLY

CURRENT REVISION: *	FILE NAME: P1493	DRAWING NUMBER: PI 493
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WARRANTY

The equipment delivered hereunder is guaranteed to be free from defective material and workmanship for a period of six (6) months from date of delivery, when given normal and proper usage, and when used by the original purchaser.

Notice of any claimed defect must be given to seller within thirty (30) days after discovery of any claimed defect. During warranty period, seller's obligation shall be limited to delivering to the buyer, F.O.B. seller's plant, replacements of any equipment or parts, or repairing such equipment or parts, found defective by inspection.

Any article not of seller's manufacture included in this proposal is sold under such warranty only as the makers give us, and we are able to enforce, but it is not guaranteed by seller in any way. No equipment or material shall be returned to seller except on our specific instructions and no claim will be honored unless we have been given an opportunity for inspection on site and in the claimed defective condition. The determination of seller's representative will be final. Seller assumes no responsibility for reimbursing repair or replacement costs incurred without our prior written authorization, or prior to a determination of seller's authorized representative. Seller assumes no liability for the cost of installation of repaired or replacement parts. All costs of packing and shipping defective parts and/or replacement of repaired parts shall be paid by buyer. In no event shall our liability under this warranty exceed the purchase price paid for the products.

THE WARRANTY STATED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SELLER SHALL HAVE NO LIABILITY WHATSOEVER IN ANY EVENT FOR PAYMENT OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING DAMAGES RESULTING IN PERSONAL INJURY.

Any action for breach of this warranty or other action under this contract must be commenced within one (1) year after such cause of action arises.