



Security Engineered Machinery Co., Inc

OPERATIONAL & MAINTENANCE MANUAL

SEM Model 0301 Jackhammer

REV: 1



As of April 1, 2009

Security Engineered Machinery Co., Inc

NATIONWIDE SERVICE

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UNLOADING/UNPACKING

Your new SEM shredder has been secured to a pallet for shipping. Please inspect equipment immediately for shipping damage.

- Using a lift truck with a minimum capacity of 2500 pounds, remove the machine from the carrier and transport to operation site. Remove pallet and discard responsibly. The output conveyor is located on top of the shredder pallet.
- SEM Hard Drive Shredders are equipped with casters for ease of handling.
- Check oil level in reducer. Add oil if necessary. See lubrication section on page 10.
- Install discharge conveyor before beginning to shred. Be sure belt is tracking properly after installation (see page 11 – diagram on page 28).

IMPORTANT: Check tracking of conveyor belt after first 10- 20 hours of run time. Belts do stretch after break-in period and you may observe slipping of belt, you also may have to tighten the belt more than once.

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ATTACHED OUTPUT CONVEYOR INSTALLATION

- With the assistance of an overhead crane, a 2nd person, fork lift, or rig a sling (just off center of conveyor so that flanged side is lower.) Lift conveyor assembly into place using the (6) bolts supplied at rear of machine. Attach conveyor and tighten bolts.

NOTE:

Be sure that side frames of conveyor are aligned with side frames of shredder.

- Install conveyor belt around drive pulley (under cutter head) and pull belt together. A second person may be necessary to bring both ends together. When both ends are put together, take extra care to ensure that staples are centered with belt. The edges of the belt should be aligned, if NOT, move belt ends over one staple and re-check alignment. When aligned properly, put connecting pin (supplied) through staple lacing. Clip off any excess pin which may be hanging out.
- Snug up take-up adjustment one half turn each side until approximately 2-inches of sag is present. Test run belt and track belt by tightening the side that rubs (as a rule of thumb) until centered.

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ELECTRICAL INSTALLATION

All electrical installation and service must be accomplished by a qualified electrician. Follow all national and local electrical codes and ordinances.

"WARNING"

LOCK POWER IN OFF POSITION

All internal wiring has been factory installed and tested prior to shipping. Electrical installation consists of providing adequate machine power only.

Check building service to ensure correct voltage is available and those current requirements can be met (according to nameplate (serial number), see fig. 7, page 19).

Install receptacle (provided) to properly protect building circuit. Select appropriate wire size and current protection to accommodate current requirements as shown on nameplate. Plug in power cable.

Turn building service drop power on. Check voltage at installed receptacle.

Ensure area is clear. Turn key switch on. Jog reverse. Check for proper motor rotation. If rotation is wrong, unplug power cable. Check that power is off with voltage meter at panel. Remove any two power wires from the motor starter, reverse and reconnect.

Turn on power and recheck rotation.

Electrical installation is complete.

Replace all guards.

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SAFETY WARNINGS

1. Read and understand instruction manual and be aware of all warning stickers.
2. Make sure that ALL guards and access panels are in place at all times, **EXCEPT** when the power is locked off for maintenance work or cleaning.
3. **ALWAYS** know where emergency stop buttons are located.
4. **ALWAYS** know, or have quick access to, emergency phone numbers.
5. **ALWAYS** ensure that all maintenance and operating personnel read and understand this manual, including those personnel working second or third shift.
6. **ALWAYS** have a standard break-in time for a new operator A minimum of two hours suggested.
7. **ALWAYS** wear safety glasses when operating shredder.
8. **ALWAYS** "lock out" power at the, disconnect when shredder is not in use, when servicing shredder, or when performing routine shredder maintenance including cleaning.
9. **NEVER** operate this or any other machine while under the influence of drugs, alcohol or medications.
10. **NEVER** wear loose fitting clothing, ties, or jewelry while in the vicinity of this shredder.
11. **NEVER** allow long hair to be worn in the vicinity of the machine without use of a protective hair net.
12. **NEVER** place any part of your body in or on any part of this machine while in operation.
13. **NEVER** change machine direction without first allowing machine to come to a complete stop.
14. **NEVER** remove guards, perform maintenance or clear jam-up debris without first locking out power disconnect.
15. **NEVER** attempt to remove debris from input chute after material has begun to move toward cutter head.
16. **NEVER** hold forward button in the depressed position.

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START-UP PROCEDURE

Pre-start-up procedure

- ⌘ Familiarize yourself with all controls and button locations.
- ⌘ Ensure that all guards and covers are in place.
- ⌘ Ensure the area is clean.
- ⌘ Check input conveyor for debris, discarded tools, etc.

Start-up

Plug power cable into installed receptacle. Turn key switch on. Depress momentarily the Forward pushbutton. Cutters will begin to rotate and the output conveyor will begin to run forward.

To stop machine at any time depress the red Stop pushbutton. For emergency situations the Stop pushbutton may be depressed at any time. For normal stop situations, wait for input chute to empty itself and the output conveyor to discharge all shredded material before depressing Stop button.

Begin feeding material to be shredded. It is recommended that during the familiarizing period the operator should proceed with small amounts of media. After several hours experience the operator may wish to increase the amount of material being fed. The operator will soon be able to judge the efficiency of the operation and feed material accordingly. It is nearly inevitable that during this learning process the machine will jam. A jam condition will automatically turn off the machine just as if the operator had depressed the Stop button. This is normal.



Important/Warning: Debris Draw is attached to keep excess material from collecting on floor, but may be removed and unit run if you are not going to empty draw after every 500 drives. **Warning if draw is not emptied frequently enough it may cause damage to belt which will be at the owner's expense to replace. We suggest keeping a daily log to check draw at the beginning of run and empty as well as after every 500 drives through-out the run, or if less than 500 empty at the end of said run.**

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CLEARING A JAM

Should a jam occur, the machine will turn itself off, ensure that all personnel are clear of both the input chute and the cutter head.

Momentarily depress the yellow Reverse pushbutton. This will cause the cutters to run backwards for as long as the Reverse pushbutton remains depressed.

Release the Reverse pushbutton. The machine will come to a stop. After the machine has completely stopped, press the forward button and try to shred material.

If machine jams again, reverse shredder, **Lock Out Power**, and manually remove offending material.

Re-start machine in the forward direction to resume operation.

NEVER Hold the forward button in the depressed position, as damage to the machine and the electrical system could occur.

NOTE:

This machine has been engineered to allow electronic media such as hard drives, CD's, floppy disks, CD drives, and Cell phones alike to be shredded into un-usable particles.

SHUT-DOWN PROCEDURE

Allow input chute and output conveyor to clear all material before shut down.

Depress red Stop pushbutton. **Remove power cable from receptacle.**

Clean any remaining debris from the machine and from the immediate area.

Remove rear guard and inspect cutters for damage.

Clear any shredded debris from cutter area.

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MAINTENANCE

Cleaning

ALWAYS lock off power before cleaning, lubricating, maintaining, removal of any guard, and after shredding operation is complete.

After each 8 hours of operation

- Remove debris and any magnets that have built up on cutters and combers (compressed air maximum 40 PSI or vacuum may be used along with manual pulling of magnet debris).
- Visually inspect cutters for damage.
- Replace all guards.

After 40 hours of operation

- Repeat steps above
- Remove side guards and end guards
- Remove debris buildup from base. (most debris should be contained in draw)
- Wipe entire machine clean being careful to observe any evidence of oil leaks. Should leakage be observed, request the attention of the appropriate maintenance personnel.
- Check for loose hardware on the reducer collars, the crusher paddles, etc.
- Remove all tools, rags, solvents from machine.
- Replace all guards.

After Every 500 Drives

- Empty debris draw

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LUBRICATION

ALWAYS lock off power before cleaning, lubricating, maintaining, removal of any guard, and after shredding operation is complete.

After 20 hours of operation.

- Grease Wear Plates.
- Grease main Bearings (see Lube Schedule page 10).
- Remove rear guard.
- Apply light machine oil to cutters.
- Replace all guards.

After each 40 hours of operation.

- Repeat steps above.
- Remove guards.
- Apply oil to drive chains (see fig. 3, page 15). Use chain and cable lubricant.
- Replace all guards.

After each 160 hours of operation.

- Repeat steps above.
- Remove guards
- Check reducer oil level. DO NOT OVERFILL.
- Check oil Level in spur gear oil bath.
- Grease output conveyor bearings using a, multi-purpose lithium based grease (see Lube schedule on page 10).
- Replace all guards.

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After 500 hours of operation.

- Repeat steps from 160 hours lubrication.
- Drain oil from reducer.
- Clean magnetic drain plug.
- Replace drain plug and refill to proper level using a high grade petroleum base, rust and oxidation inhibited gear oil as specified.
- Remove Spur Gear oil bath and clean bottom oil pan. Refill with 85W-140 gear oil until oil level reaches middle of sight glass.

CAUTION:

Too much oil will cause over heating, and too little oil will result in gear failure.

Check oil level monthly. Also, under extreme operating conditions, such as rapid rise or fall of temperatures, dust, dirt, chemical particles, chemical fumes, or oil temperatures above 200 degrees F., the oil should be changed every one to three months depending on the severity of conditions.

LUBE SCHEDULE

ITEM	LUBE FREQUENCY	TYPE LUBE
Spur Gears	Check Level Weekly	85W-140 Gear Lube
Reducer	Check Weekly Drain and Refill (500 Hrs)	VG 220
Cutters	Every 20 Hours	10W, 20W, 30W, Motor Oil
Chains	Every 40 Hours	Chain and Cable Lube
Main Bearings	Every 8 Hours	Multipurpose Grease 2 oz/ bearing
Output Conveyor Pulley Bearings	Every 160 Hours	Multipurpose Grease
Wear Plates	Every 20 Hours	Multipurpose Grease

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CONVEYOR BELT ADJUSTMENT

Alignment and Tensioning

- Read all safety warnings (see page 5) before proceeding.
- Lock power off.
- Mark the initial position. Make all adjustments in small increments.
 - ⌘ By design, the conveyor belt should have 1/16" or less clearance to side frames. This assists in preventing debris from getting under the belt but some side rubbing may be expected. This is normal.
- Loosen jam nuts, each side of machine (see fig. 5, page 17).
- Turn jam nuts half turn each side, repeating until belt is at proper tension.
- Ensure all personnel are clear and that no tools are on machine or input chute.
- Turn power on.
- Run machine in Forward.
- Stop machine and turn power off.
- Adjust alignment by tightening take-up bolt on side of conveyor where belt is rubbing side frame. Tighten only one quarter turn at a time.
- Tighten jam nuts.
- Replace all guards.
- Turn power on.
- Run machine forward for five minutes. If further alignment is required, repeat the above steps.

NOTE:

Belt may run slightly off center. When machine is run in reverse, the belt may run slightly off center to the opposite side. This is normal. The belt may stretch during the first few days of operation. This will affect alignment since the belt alignment relies in part on proper tensioning for effective tracking.

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CUTTER HEAD ADJUSTMENT

NOTICE: Over tightening of cutter head can result in excessive wear to brass wear plates and cutters. This may also shorten cutter and bearing life.

***Make sure machine is locked out before checking cutter clearance.**

SEM recommends thoroughly cleaning the cutter head and ensuring that cutters move freely on the shafts before checking clearance.

Cutter Clearance should be checked if any of the following conditions exist:

- Shred capacity drops noticeably
- Media is passing through cutters without being completely shredded
- Cutter Head becomes extremely hot
- Abnormal noise being generated from cutter head
- Noticeable large gap between two cutters.

NOTICE: CUTTER HEAD ADJUSTMENT MUST BE MADE ON A COLD CUTTER HEAD!

- Lock out machine power to prevent injury
- Remove Rear Guard
- Clean and oil the cutter head ensuring that there are no obstructions
- Move all of the cutters to the spur gear side of the cutter head
- Check distance between the overlap of a upper and lower cutter using a pry bar and a feeler gauge. Cutter clearance should be set to a minimum of .030" (approximately 1/32")
- Locate the set screws on the chain side of the cutter head. Loosen the jam nut, and using an allen wrench to turn the screws clockwise to close the gap.
- Once the wear plate touches the cutter, back the screw off half of a turn. This will closely approximate a 1/32" clearance. Tighten the jam nuts and replace all guards and covers.

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SHREDDER OPERATION



Figure 1

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GUARD IDENTIFICATION



Figure 2

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CHAIN LUBRICATION

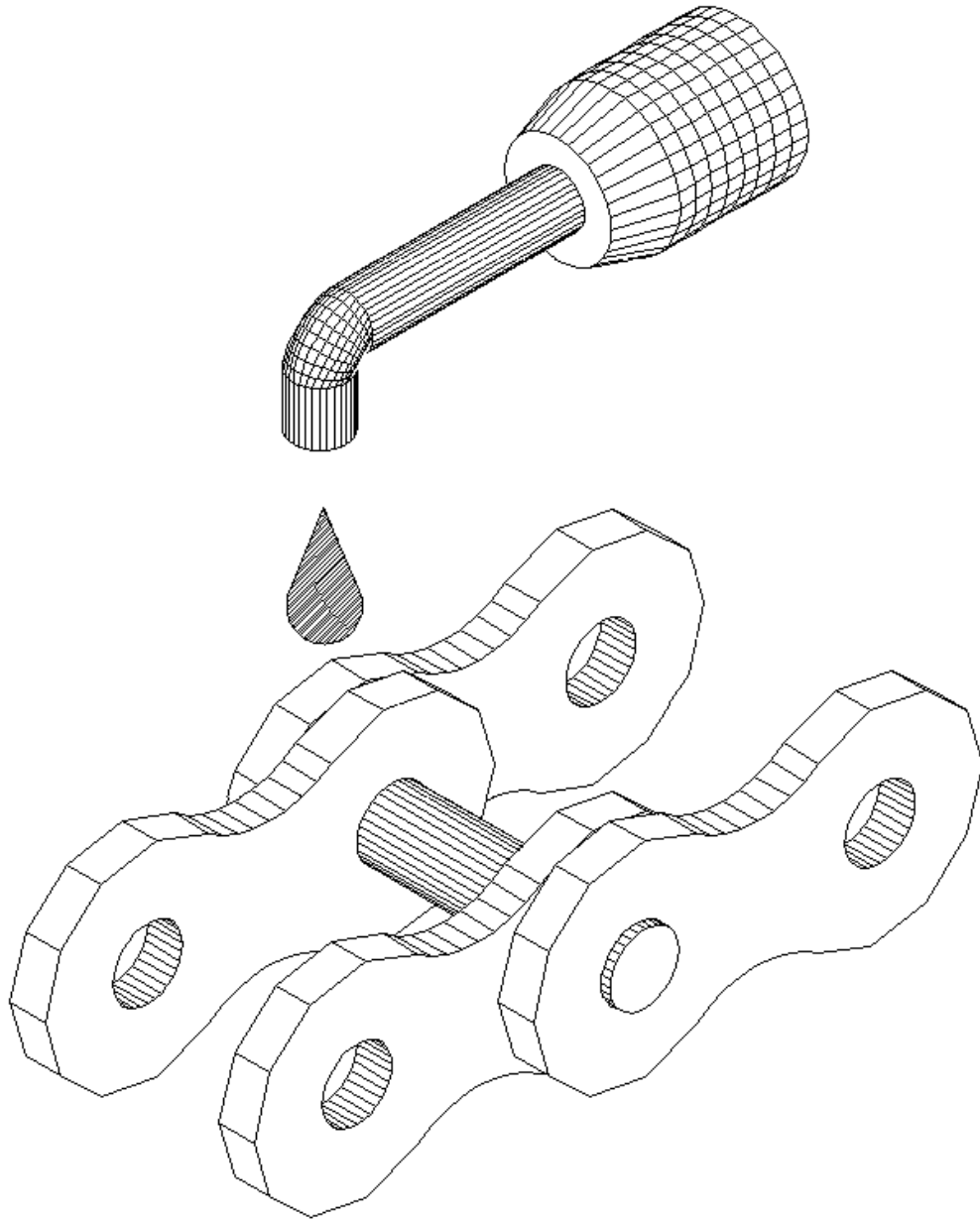


Figure 3

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REDUCER LUBRICATION

Reducer Breather/ Fill Plug



Figure 4

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CONVEYOR BELT TAKEUP

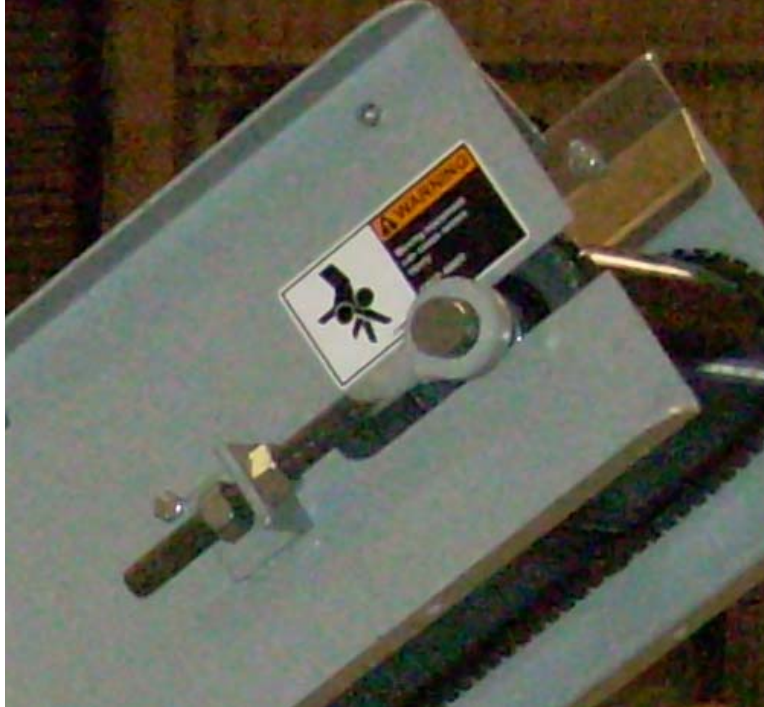


Figure 5

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CHAIN TENSIONER



Figure 6

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NAMEPLATE

Example:

MODEL NO. JACKHAMMER			S.N.	
460	VOLT	60 CYCLE A.C.	7.6	AMPS
5	H.P.	3 PHASE	JOB#	15506

Figure 7

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TROUBLESHOOTING

“WARNING”

LOCK OUT POWER before performing any cleaning, oiling, maintenance, or trouble shooting.

PROBLEM	POSSIBLE CAUSE	REMEDY
Machine will not turn off using stop buttons.	Defective stop button. Contacts burned together in reversing contactor.	Check continuity (N.C.) If bad, replace. Check each leg of forward side of contactor for continuity. There should be no continuity. If there is, consult factory for replacement part.
Machine will not run in forward or reverse.	If power light is illuminated, proceed to possible cause seven. 1) No power. 2) Key switch off. 3) Fuse blown in disconnect. 4) Overload tripped in panel.	Check power supply. Turn on. Remove each fuse and check for continuity. If bad, replace. Reset.

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Troubleshooting (continued)

PROBLEM	POSSIBLE CAUSE	REMEDY
Machine will not run in forward or reverse. (continued)	5) Control transformer fuse blown. 6) Stop button stuck "in". 7) Loose wire in panel. 8) Defective contact block on stop button.	Remove fuse and check for continuity. If bad, replace. Check buttons. Check terminal strip for disconnected or loose wires. Reconnect and tighten loose wires to proper location on strip. Check block for continuity. If bad, replace.
Motor hums or buzzes, but will not turn in either forward or reverse.	One leg of the 3 phase power is dead (single phasing). Contacts burned in contactor and not making a connection on one leg. Defective motor.	Remove each fuse. Check for continuity in the power supply and disconnect. Consult factory for replacement contactor. Consult factory for replacement motor.
Overload tripping.	Low voltage. Current relay set too high.	Check voltage. Consult factory.

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Troubleshooting (continued)

PROBLEM	POSSIBLE CAUSE	REMEDY
Overload tripping. (continued)	<p>Motor overheating.</p> <p>Dirty or un-lubricated cutter head.</p> <p>Defective motor.</p>	<p>Check motor cooling fan for objects obstructing air flow.</p> <p>Clean and lube.</p> <p>Conduct amperage test. Consult factory for replacement motor.</p>
Machine will not run in forward but will run in reverse.	<p>Defective forward button.</p> <p>Disconnected wire on forward button.</p> <p>Disconnected wire on current relay.</p> <p>Current relay stuck open.</p>	<p>Check contact block for continuity. If bad, replace.</p> <p>Check and reconnect.</p> <p>Check and reconnect.</p> <p>Clean relay. Free up center spool. Check continuity. If bad, consult factory for replacement relay.</p>
Machine will not run in reverse but will run in forward.	<p>Defective reverse button.</p>	<p>Check for continuity. If bad, replace.</p>

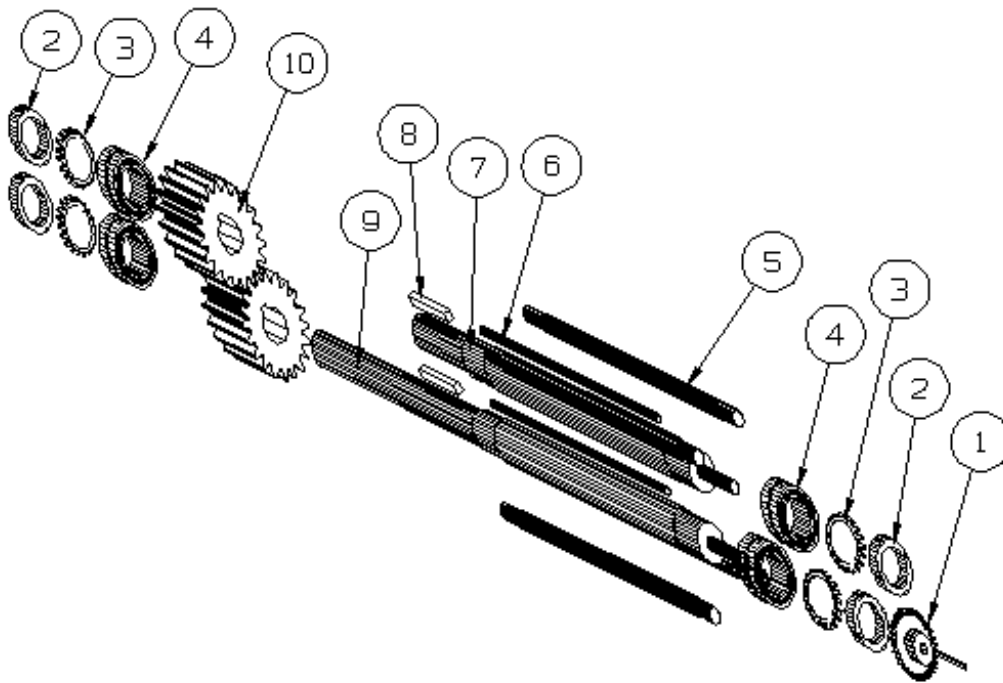
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Troubleshooting (continued)

PROBLEM	POSSIBLE CAUSE	REMEDY
<p>Machine will not run in reverse but will run in forward. (continued)</p>	<p>Disconnected wire on reverse button.</p> <p>Defective coil in reverse side of contactor.</p>	<p>Check and reconnect.</p> <p>Consult factory for replacement coil.</p>
<p>Shredding capacity is low.</p>	<p>Un-lubricated cutter head.</p> <p>Low voltage.</p> <p>Current relay set too low.</p>	<p>Clean and oil cutter head.</p> <p>Check voltage at power supply.</p> <p>Consult factory before making any adjustments.</p>

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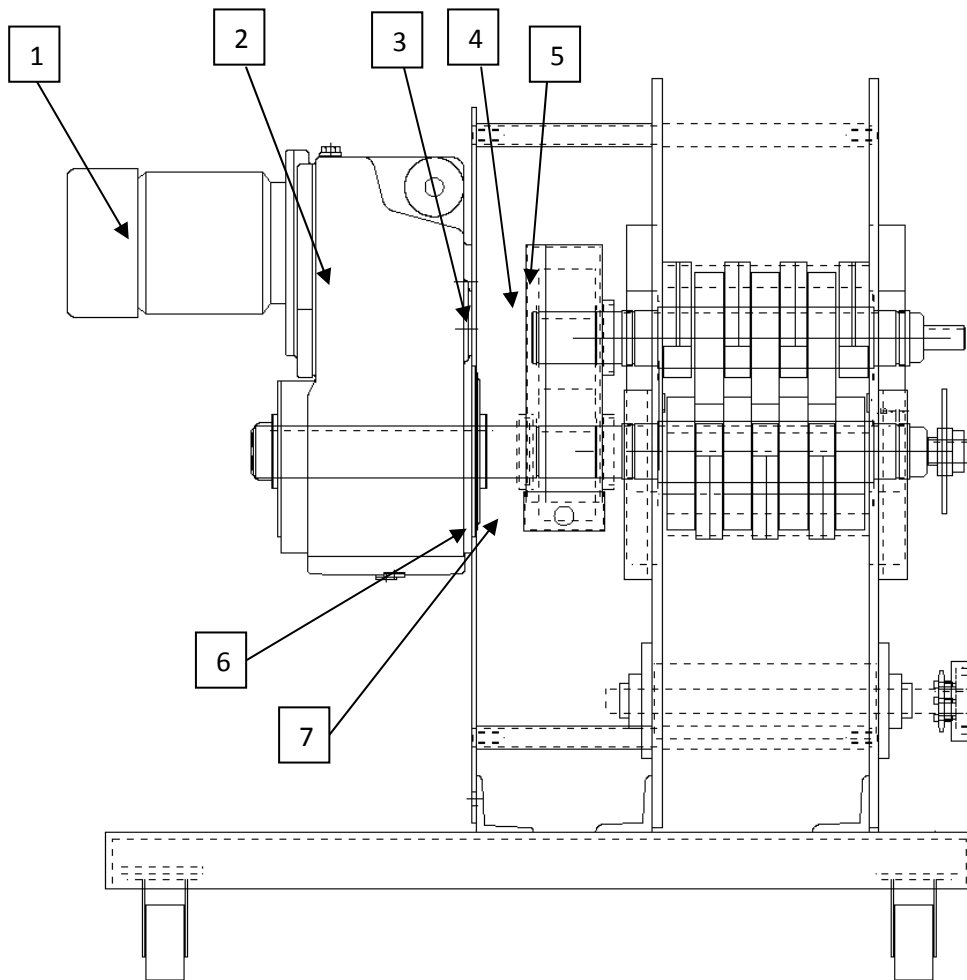
BEARING ASSEMBLY



ITEM	QTY	PART #	DESCRIPTION
1	1	SAAM110004	CONVEYOR DRIVE SPROCKET 40B40
2	4	SAAM110014	BEARING LOCK NUT
3	4	SAAM110015	BEARING RETAINING WASHER
4	4	SAAM110013	MAIN BEARINGS
5	4	SAAM33398	CUTTERHEAD TIE BARS
6	2	SAAM30561-11	CUTTER KEYS
7	1	SAAM33395	UPPER MAIN SHAFT
8	2	SAAM30556	SPUR GEAR KEYS
9	1	SAAM33396	LOWER MAIN SHAFT
10	2	SAAM110016	SPUR GEARS

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DRIVE PACKAGE

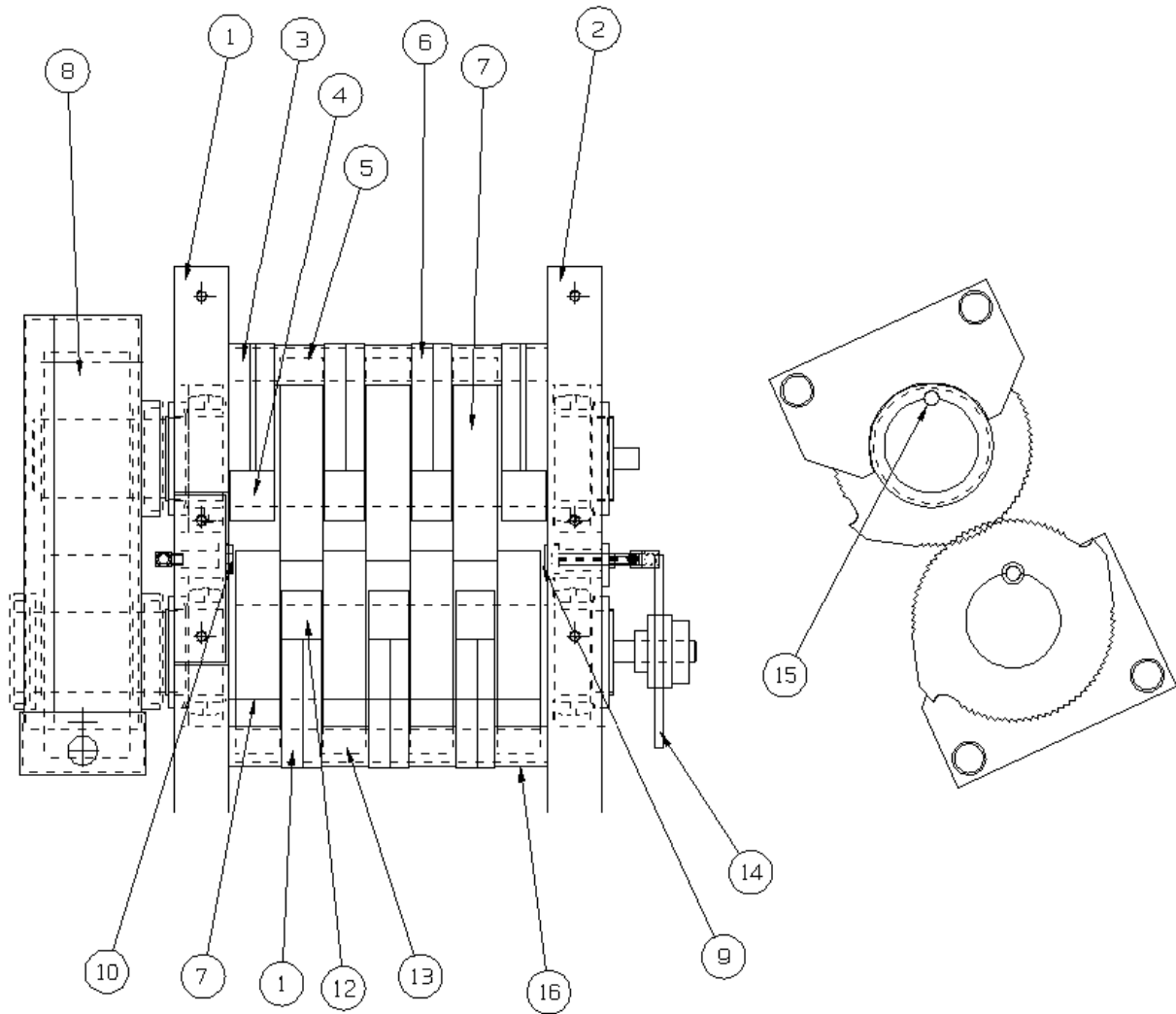


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KEY	QTY	PART #	DESCRIPTION
1	1	MOTOR	5 HP MOTOR
2	1	SAAM111787	NORD GEAR REDUCER – SHAFT MOUNT
3	1	SAAM33419	FRONT OIL BATH COVER
4	2	SAAM110016	SPUR GEARS
5	1	SAAM33418	BACK OIL BATH COVER
6	1	SAAM33420	OIL BATH BOTTOM PAN
7	1	SAAM109057	OIL BATH SIGHT GAUGE

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CUTTER HEAD ASSEMBLY



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CUTTER HEAD ASSEMBLY (CONTINUED)

ITEM	QTY	PART #	DESCRIPTION
1	1	SAAM33390	SIDE PLATE – DRIVE SIDE
2	1	SAAM33391	SIDE PLATE – IDLE SIDE
3	2	SAAM33503	TOP OUTSIDE COMBERS
4	2	SAAM33394	TOP OUTSIDE CUTTER SPACERS
5	4	SAAM33517	COMBER SPACERS
6	2	SAAM33504	TOP COMBERS
7	7	SAAM33387/SAAM33388	HOOKED CUTTER
8	2	SAAM110016	SPUR GEARS
9	1	SAAM32165	WEAR PLATE – ADJUSTABLE
10	1	SAAM32166	WEAR PLATE – FIXED SIDE
11	3	SAAM33499	BOTTOM COMBERS
12	5	SAAM33393	CUTTER SPACERS
13	6	SAAM33518	COMBER SPACERS
14	1	SAAM110004	CONVEYOR DRIVE SPROCKET
15	2	SAAM30561-11	CUTTER KEYS
16	4	SAAM33516	LOWER OUTSIDE COMBER SPACERS

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