ST9000™ Plastic Staple® Attacher

Operator and Service Manual©

Part No. DT0406-001 Rev. A

AVERY DENNISON
Fastener Division

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Contents

Important Safety Instructions

⚠ WARNING	For your safety the information in this manual must be followed to prevent personal injury or loss of life.

- The needles are extremely sharp and can cause serious injury. Keep hands and personal clothing clear of needles during operation.
- Do not remove the needle guards and do not operate the machine without needle guards in place.
- Disconnect power to the machine before replacing needles.
- Do not attempt to remove the cover, or service or disassemble any component while the ST9000 is connected to a power source. Disconnect the power cord before attempting to replace any component.
- Do not operate the ST9000 with the cover removed or make any attempt to defeat the cover interlock switch. Moving parts and shock hazard can cause serious personal injury.

CAUTION	Improper use of lubricants can cause machine failure and/or damage to the garment.

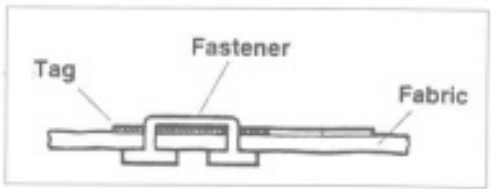
- Do not use any type of lubricant on the fastener path. Use only compressed air to clean it.
- Do not use any solvents on the ST9000.

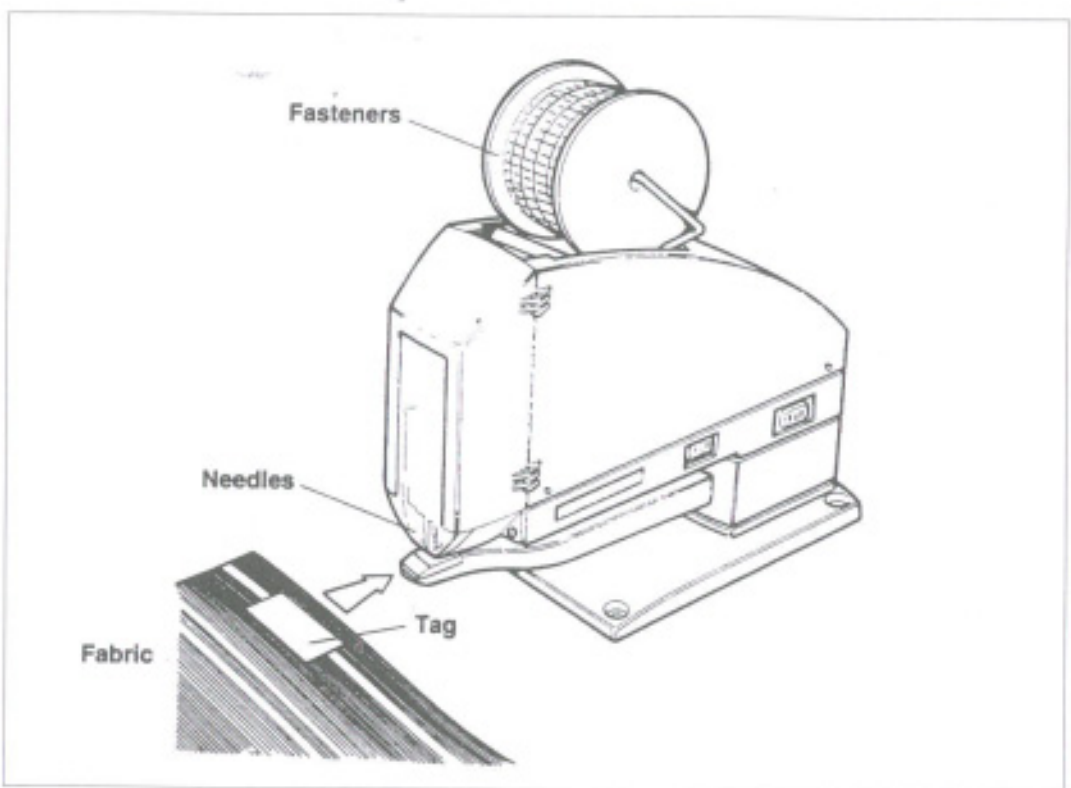
Chapter 1

Introduction

This manual provides all of the information required to install, operate, troubleshoot, and service the Avery Dennison ST9000™ Plastic Staple® Attacher.

The ST9000 fastens garment size, pricing, and brand-name tags to fabrics by inserting Plastic Staple™ fasteners through the tag and the underlying fabric.





Chapter 2

Installation

The chapter describes how to install the ST9000.

- ❒ Unpacking the ST9000
- ❒ Mounting the ST9000
- ❒ Mounting the Vertical ST9000
- ❒ Setting up the ST9000 for operation

Unpacking the ST9000™

1. Check the contents of the shipping box. It should contain the following:

   1 ST9000™ Plastic Staple® Attacher
   1 Operator and Service Manual
   2 Power cords
   1 Reel support

2. Remove the ST9000 and the reel support.
3. Remove the power cords, select the appropriate cord, and discard the unused cord.

   ❒ For 200/240 VAC, UL/CSA and all other countries, use the cord labelled 7-60-4270-01.

   ❒ For 200/240 VAC, IEC countries, use the cord labelled 7-60-4270-02.

   ❒ For 100/120 VAC, Japan, use the cord labelled 7-60-4270-03.

4. Visually inspect the ST9000 and the shipping materials for damage.

   ❒ If the ST9000 is damaged, notify Avery Dennison immediately.

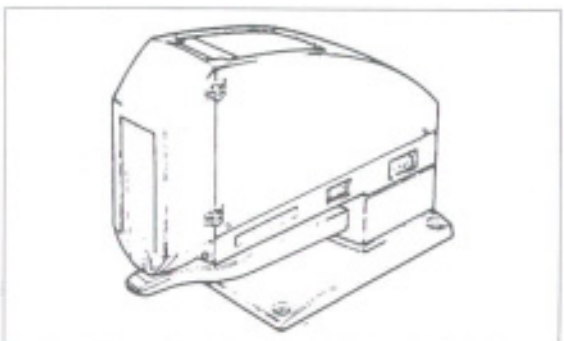
   ❒ If the shipping box is also damaged, notify the freight carrier as well as Avery Dennison, and save the shipping materials for the carrier to inspect.

Mounting the ST9000™

1. Decide how to mount the ST9000.

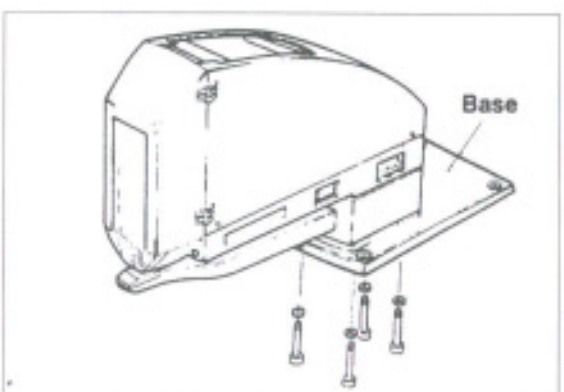
   The ST9000 must be bolted to a stable, heavy work surface.

   When shipped from the factory, it is set up as shown to the right.



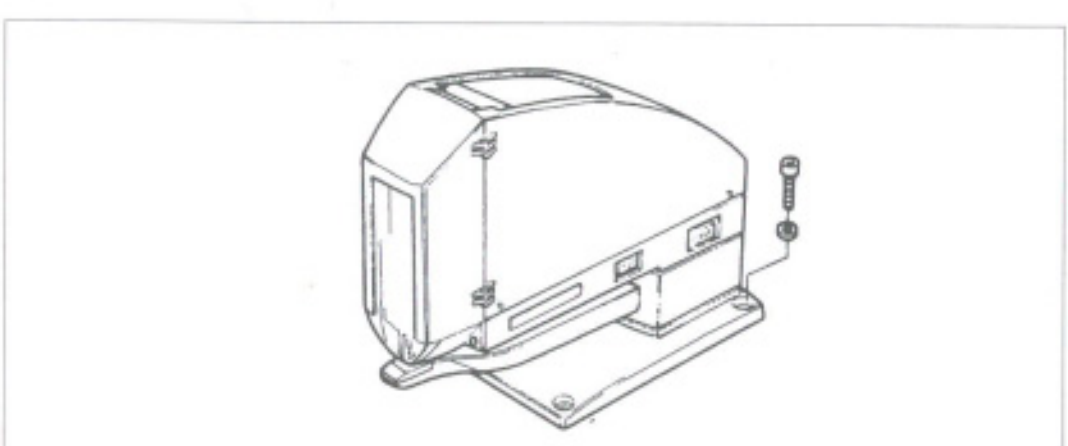
   If you require more clearance between the ST9000 and the mounting surface, you can rotate the base 180 degrees for overhanging edge of bench operation.

   To reverse the base, remove the four bolts from the bottom of the base, rotate the base, and replace the bolts.



⚠ WARNING **With the base rotated, the ST9000 will not stand unsupported without tipping.**

2. Position the ST9000 on the work surface and mark the location of the four mounting holes in the base.
3. Drill four mounting holes in the work surface for the mounting bolts.
4. Bolt the ST9000 to the work surface.

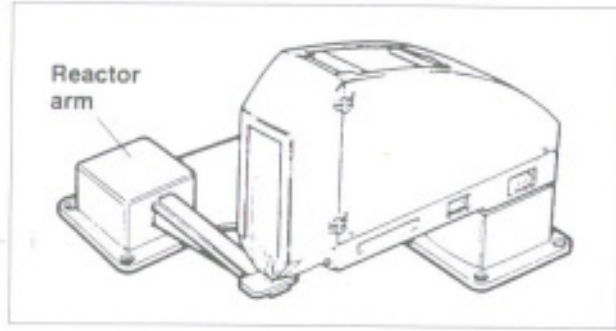


Mounting the Vertical ST9000™

The Vertical ST9000™ can be mounted for either left or right hand operation.

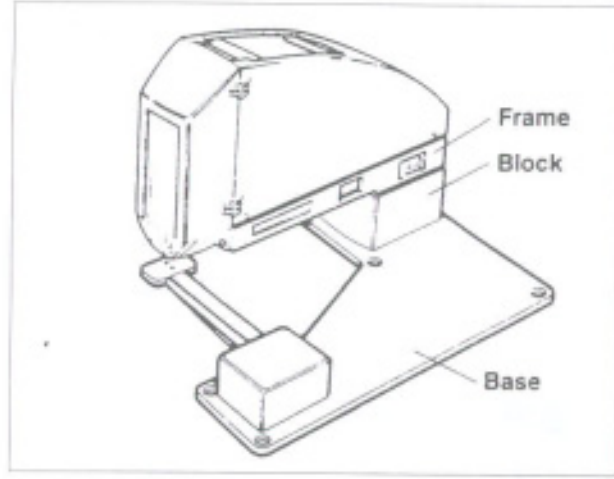
1. Decide how to orient the Vertical ST9000.

   When shipped from the factory, the reactor arm extends from the left.

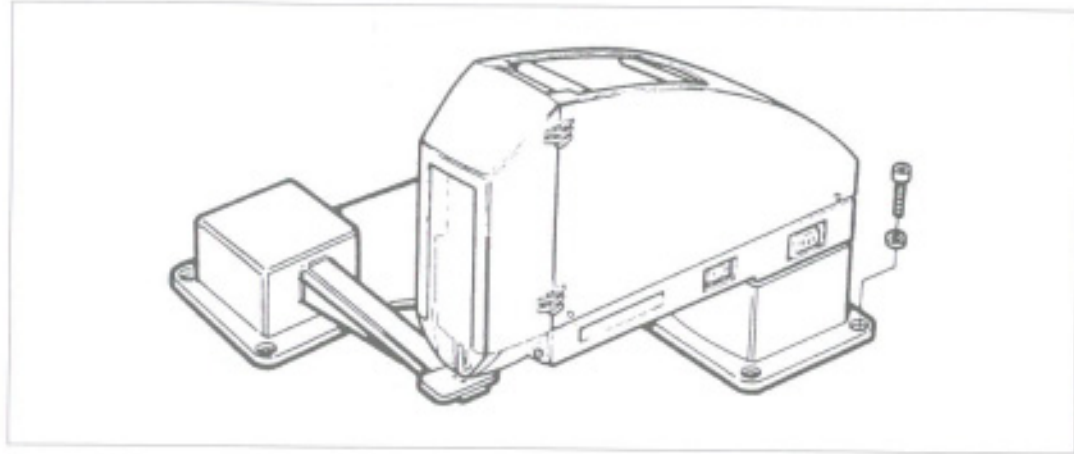


   If you prefer, you can reverse the reactor arm so it extends from the right.

   To reverse the reactor arm, unbolt the frame, block, and reactor arm from the base. Then flip the base over and remount the frame, block, and reactor arm.

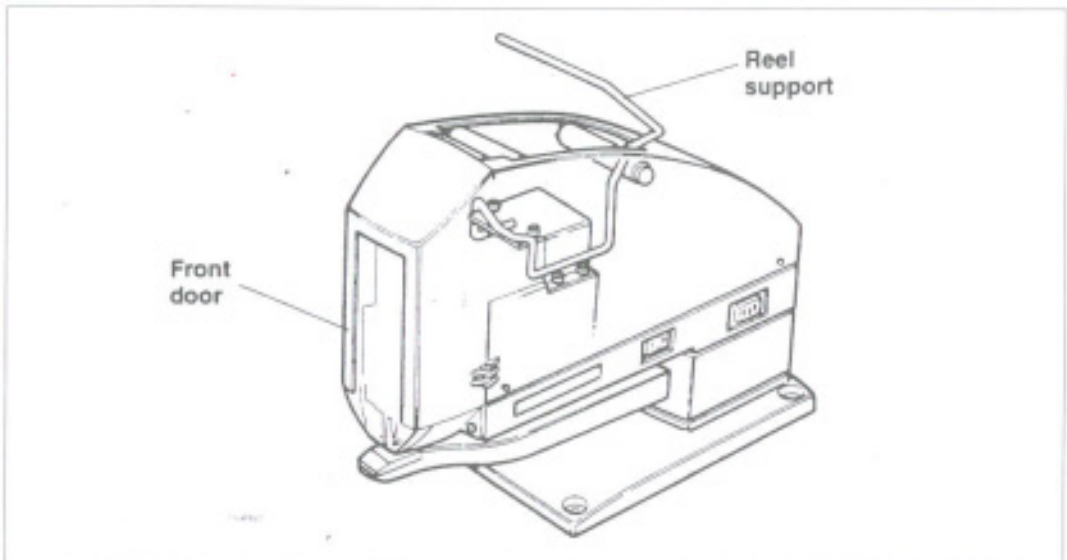


2. Position the ST9000 on the work surface and mark the location of the six mounting holes in the base.
3. Drill six mounting holes in the work surface for the mounting bolts.
4. Bolt the Vertical ST9000 to the work surface.

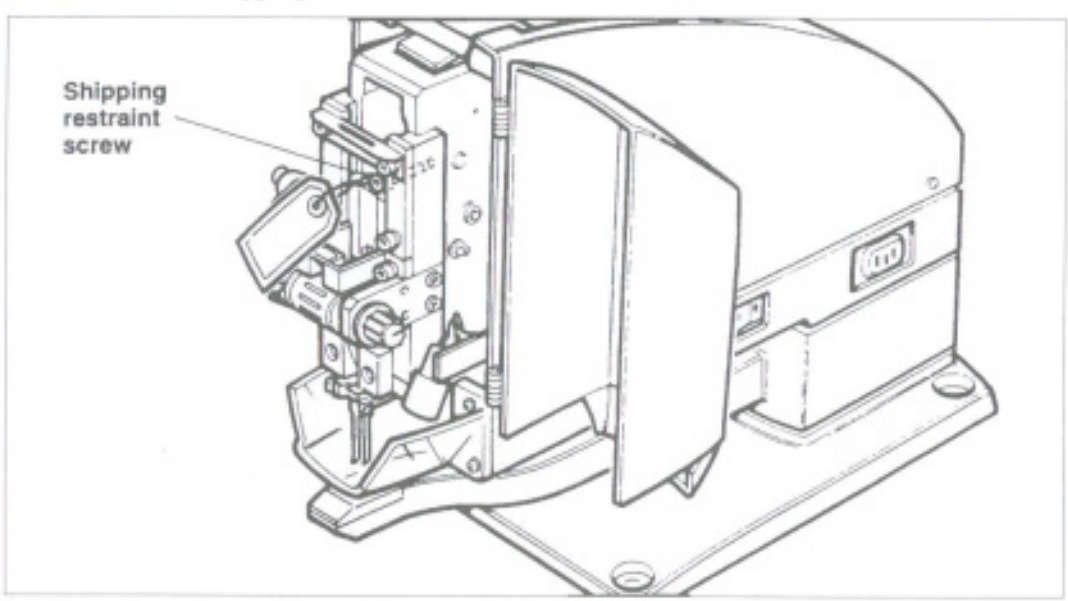


Setting Up the ST9000™

1. Position the reel support in the top of the ST9000 as shown below.



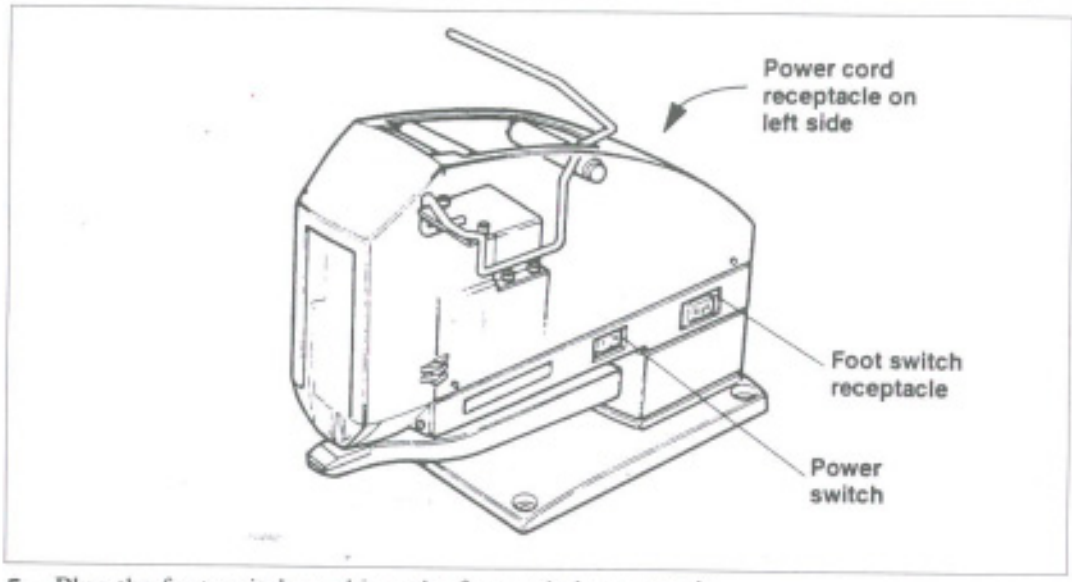
2. Open the front door.
3. Remove the shipping restraint screw.



NOTE Keep the shipping restraint screw. If you need to ship the unit, you must use this screw to lock the head in mid-cycle, as follows:

Lower the head by actuating the machine and opening the door before the machine can complete one cycle. Manually raise the head until you can thread the screw into the tapped hole, then tighten the screw.

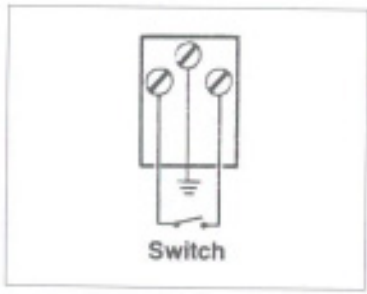
4. Make sure the power switch is in the OFF position (**0**), then plug the power cord into the power cord receptacle on the ST9000.



5. Plug the foot switch cord into the foot switch receptacle.

NOTE If you are not using the optional Avery Dennison foot switch, you can order an Avery Dennison actuator connector (Part 0-016-489-01) and use your own foot switch.

A wiring diagram for the actuator connector is shown here.



6. Connect the power cord to an electrical outlet and turn the ST9000 power switch from OFF (**0**) to ON (**I**).

Chapter 3

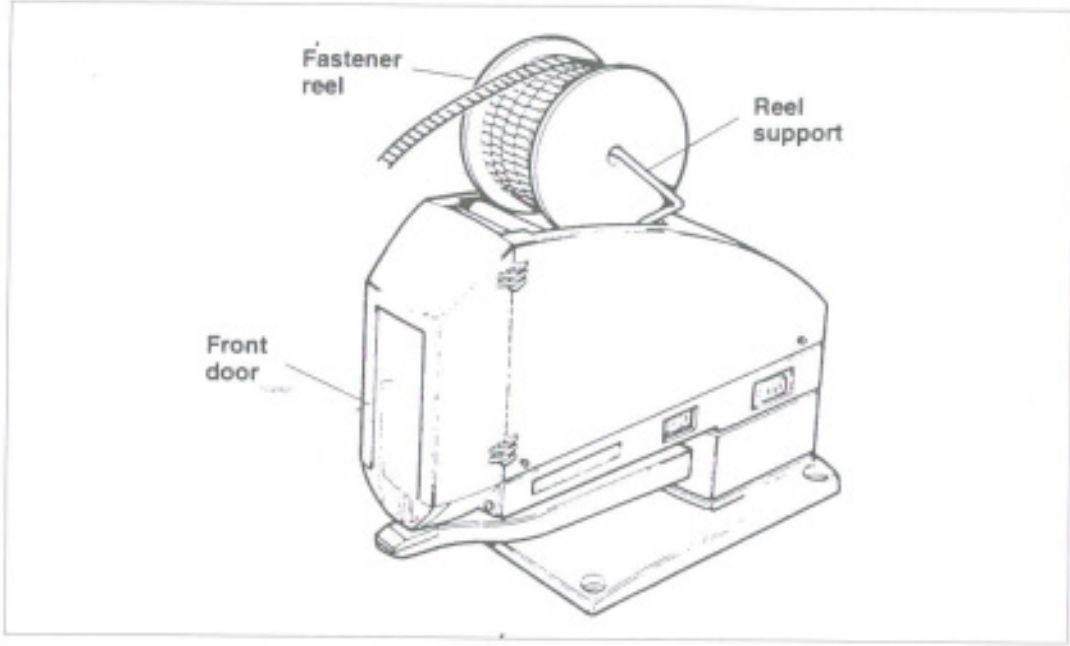
Operation

The chapter explains how to operate the Avery Dennison ST9000.

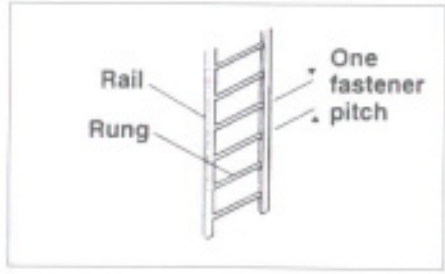
- ❒ Loading fasteners
- ❒ Adjusting the fastener cut
- ❒ Inserting a fastener into a garment
- ❒ Inspecting the fastener cut

Loading Fasteners

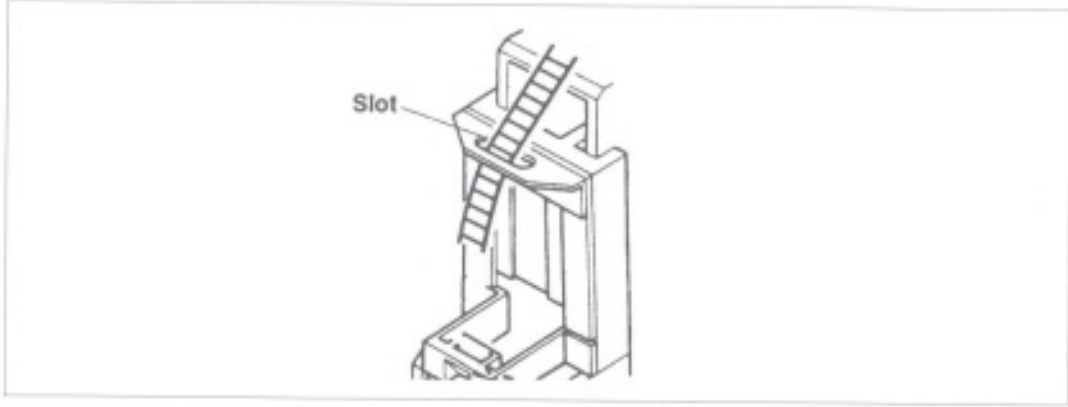
1. Turn the power switch to OFF (0).
2. Open the front door of the ST9000.
3. Place a reel of fasteners on the reel support with the fasteners coming off the top of the reel. Check that the reel rotates freely.



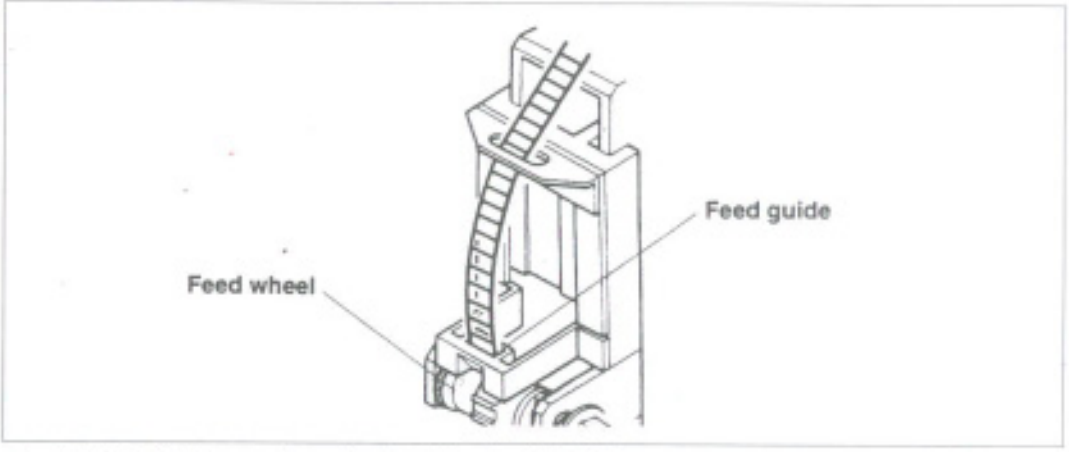
4. Cut the end of the fasteners midway between two rungs.



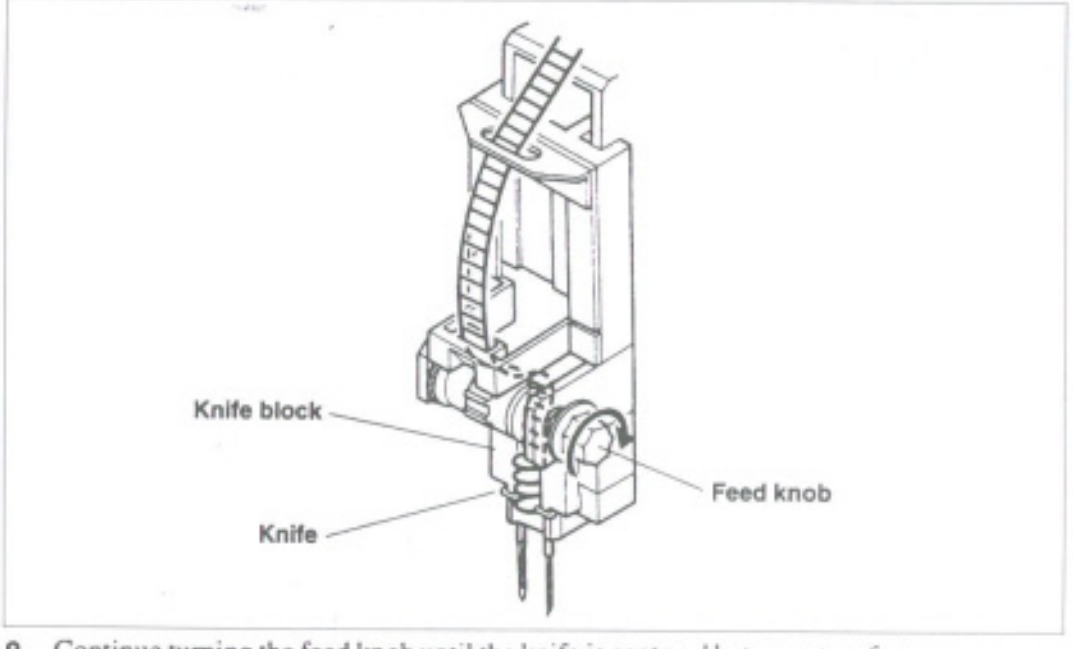
5. Feed the fasteners through the upper slot on the front of the ST9000. (Refer to the fastener feed diagram inside the front door, if necessary).



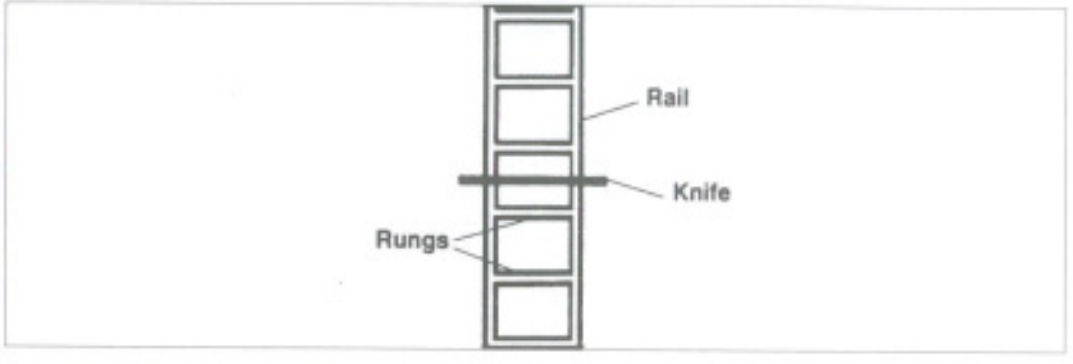
6. Feed the fasteners into the plastic guide above the feed wheel.



7. Feed the fasteners down behind the feed wheel.
8. Turn the feed knob clockwise to advance the fasteners down through the knife block.



9. Continue turning the feed knob until the knife is centered between two fastener rungs.



Adjusting the Fastener Cut

If the knife is not centered between two fastener rungs, you must adjust the fasteners position.

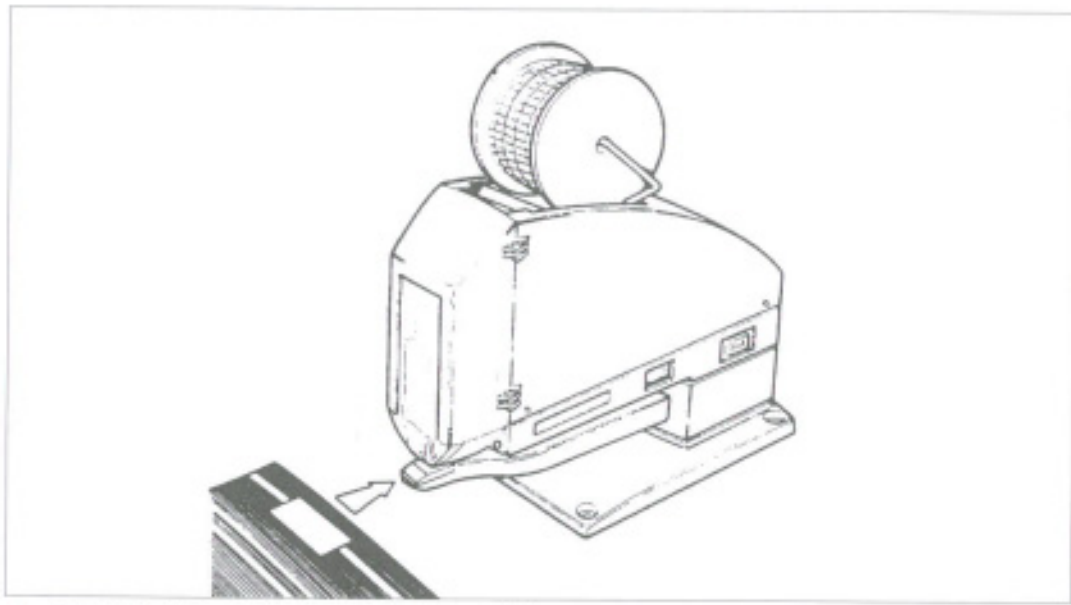
1. Push the feed knob in to disengage the feed wheel, then turn the feed knob counterclockwise, backing out one fastener.
2. Release the inward pressure on the feed knob, then turn it clockwise until the knife is midway between two rungs.
3. Repeat this process until knife is centered between two rungs.

Inserting a Fastener into a Garment

1. Place the garment and tag between the reactor plate and the needle guard.

⚠ WARNING

The needles are extremely sharp and may cause serious injury. Keep hands and personal clothing clear of the needles during operation. Do not remove the needle guards and do not operate the machine without needle guards in place. Disconnect power to the machine before replacing needles.



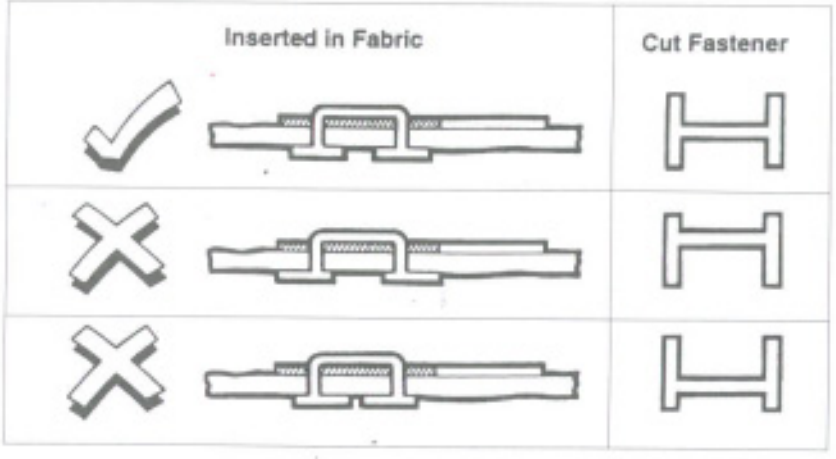
2. Press the foot pedal to actuate the machine.

NOTE The front door is equipped with an electrical interlock switch that disables power when the door is opened. The door must be completely closed to operate the ST9000.

3. Reposition the garment for the next fastener and press the foot pedal.
4. Continue the process until the garment is fully tagged.

Inspecting the Fastener Cut

1. Inspect the fastener to see if it is inserted into the fabric correctly.



2. Adjust the fastener cut if necessary (see page 18).

Chapter 4

Theory of Operation

This chapter describes the operating principles of the ST9000.

You should read this chapter if you are responsible for troubleshooting and repairing the ST9000.

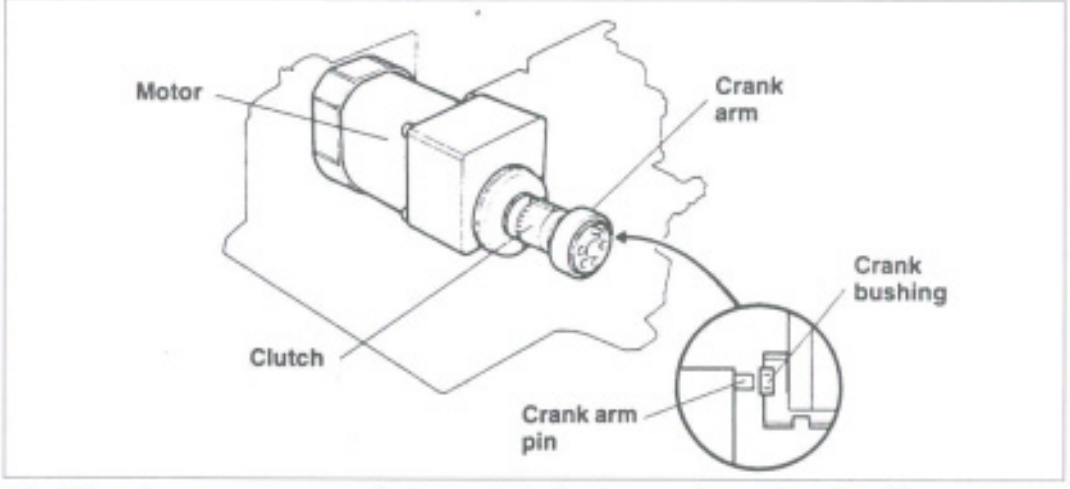
The ST9000™ Cycle

The ST9000 inserts a single Plastic Staple™ fastener each time the operator actuates the foot switch (or other.actuating switch). Typically, the fastener attaches a ticket to a piece of fabric.

Each time the operator presses the actuator, the ST9000 completes a single cycle, then comes to rest again.

The following describes one cycle.

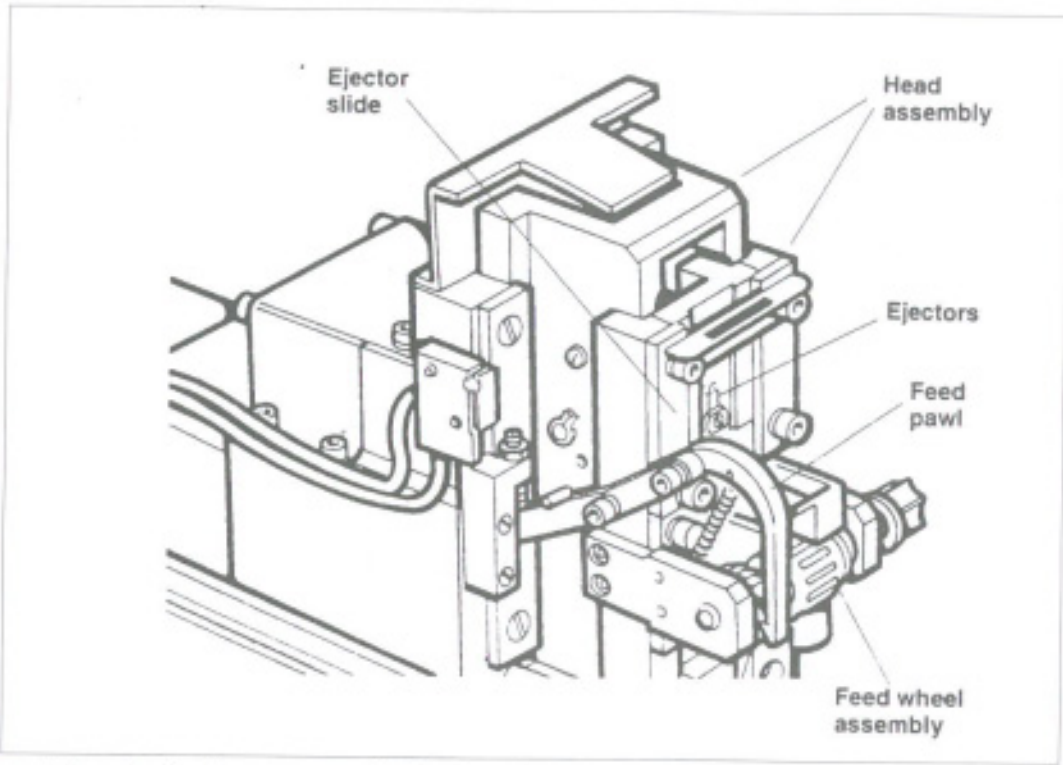
❒ When the ST9000 is turned on, the motor is continuously running. The solenoid arm engages a cog on the spring wrap clutch, holding the clutch disengaged.



❒ When the operator presses the foot switch, the timer activates the solenoid, retracting the solenoid arm which engages the clutch.

❒ The clutch is engaged long enough to turn the crank arm through one revolution. A pin on the end of the rotating crank arm moves the head down.

- ❒ As the head starts down, a cam inside the head pushes a lever which moves the knife, cutting the fastener.
- ❒ As the head moves down, gears inside the head drive the ejector rods down faster than the rest of the head. The ejector rods drive a fastener out the needles and through the garment.



- ❒ When the head comes up, the feed pawl engages the ratchet on the feed wheel, advancing a new fastener into the cut position.
- ❒ As the crank arm completes one rotation, the solenoid arm contacts the cog on the spring clutch. This disengages the clutch, stopping the head in the raised position and allowing the motor to idle.

Chapter 5

Parts Replacement

This chapter describes how to remove, replace, and adjust the field serviceable components in the ST9000.

Required Tools

- ❒ Small and medium flat blade screwdrivers
- ❒ Small Phillips-head screwdriver
- ❒ Pair of needle-nosed pliers
- ❒ Set of metric ball-end Allen wrenches
- ❒ C-ring pliers
- ❒ Small hammer
- ❒ Small punch
- ❒ 8mm open end wrench

Operational Check

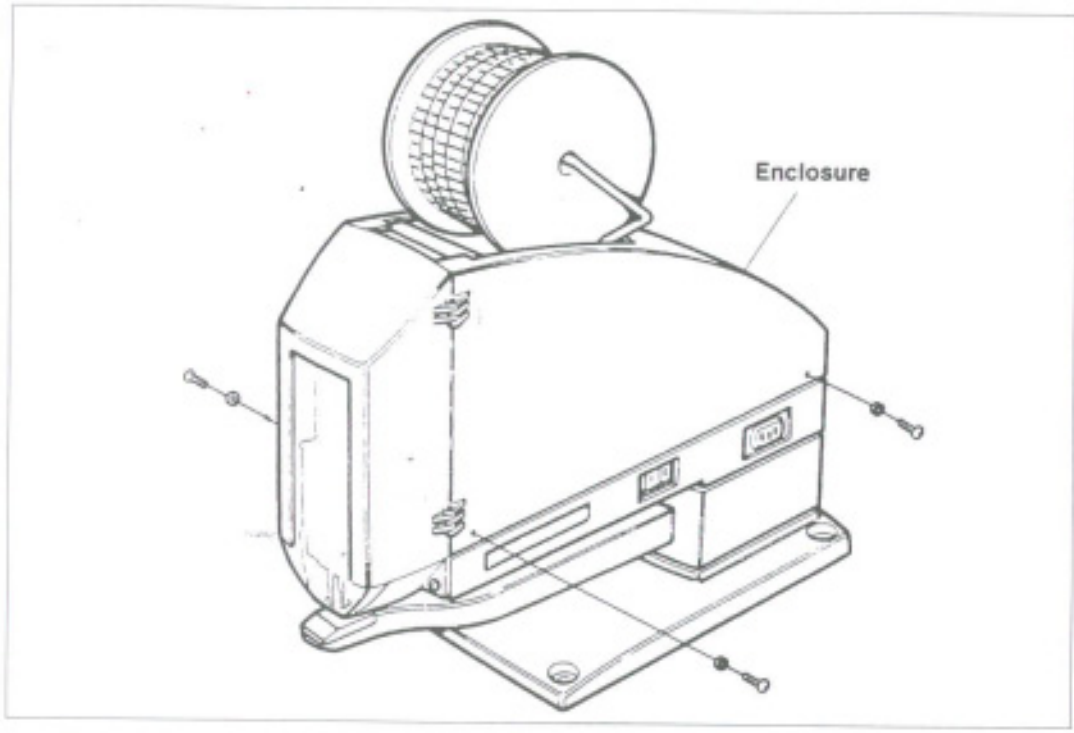
NOTE | After repair or reassembly, *always* perform the following operational check.

1. Replace the ST9000 enclosure and needle guard.

⚠ WARNING **Do not operate the machine with the enclosure and needle guards removed. Needles and moving parts may cause serious personal injury.**

2. Make sure the Power Switch is OFF (O) and plug in the power cord. The ST9000 should not cycle.
3. Turn the Power Switch ON (I). Check that motor is running.
4. Press the foot switch. The ST9000 should cycle once and then stop.
5. Load fasteners and test for correct fastener cut and insertion.

Removing the Enclosure

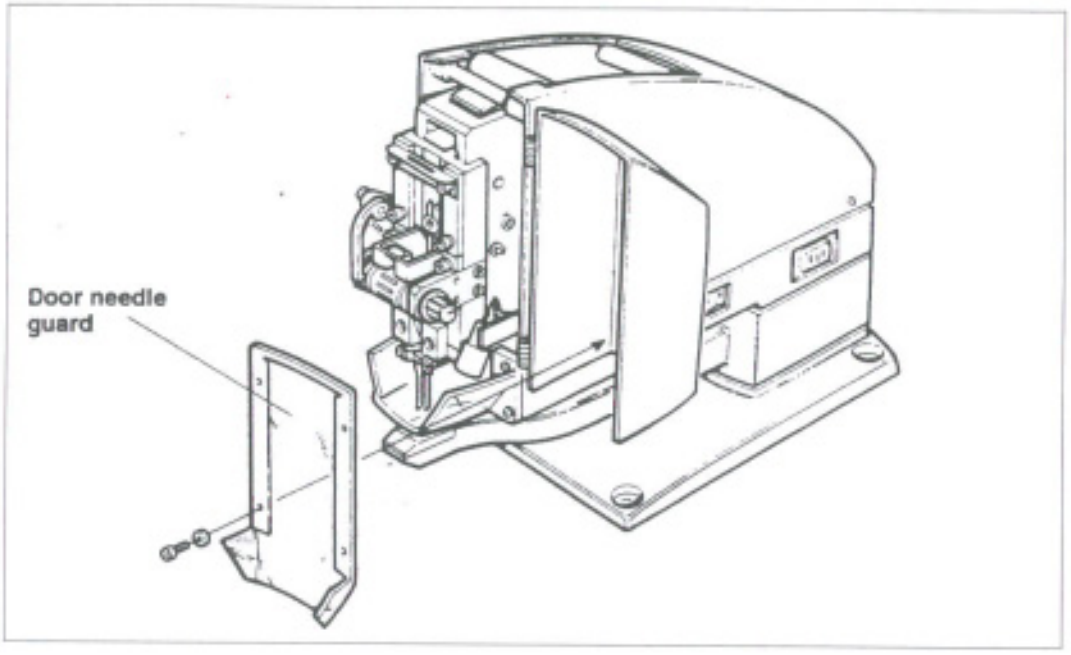


⚠ WARNING Do not attempt to remove the enclosure, or service or disassemble any component while the ST9000 is connected to a power source. Disconnect the power cord before attempting to replace any component.

⚠ WARNING Do not operate the ST9000 with the enclosure removed or make any attempt to defeat the enclosure interlock switch. Moving parts and shock hazard may cause serious personal injury.

1. Unplug the unit.
2. Remove the fastener reel.
3. Remove the fastener reel holder.
4. Remove the four screws holding the enclosure to the frame.
5. Open the front door.
6. Slide the enclosure to the rear and remove.

Replacing the Door Needle Guard



Disassembly

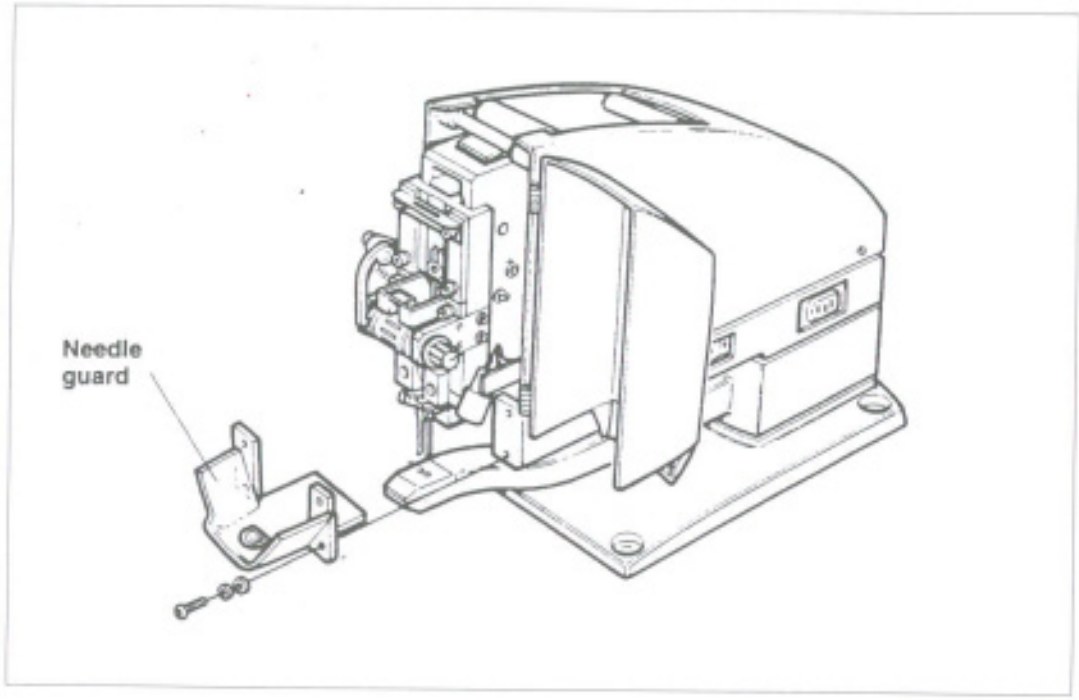
1. Open the front door.
2. Remove the four screws holding the door needle guard.
3. Remove the door needle guard.

⚠ WARNING **Do not operate the machine with the needle guards removed. Needles and moving parts may cause serious personal injury.**

Assembly

1. Position the door needle guard in the front door.
2. Insert and tighten the four screws.

Replacing the Needle Guard



Disassembly

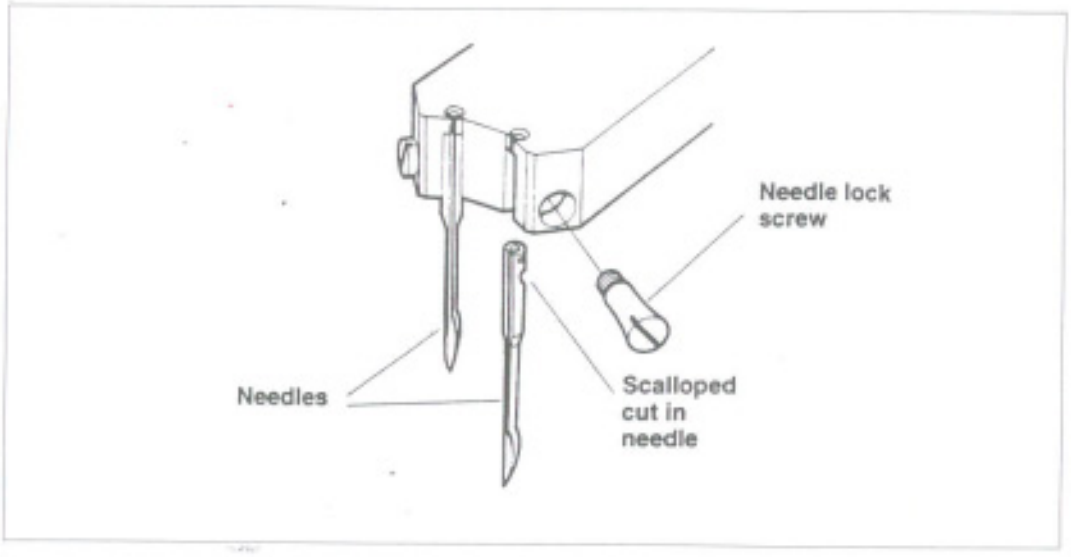
1. Open the front door.
2. Remove the four screws holding the needle guard.
3. Remove the needle guard.

⚠ WARNING **Do not operate the machine with the needle guards removed. Needles and moving parts may cause serious personal injury.**

Assembly

1. Position the needle guard.
2. Insert and tighten the four screws.

Replacing the Needles



Disassembly

⚠ WARNING **Needles are extremely sharp, and can puncture the skin with very little pressure. Use extreme care when handling.**

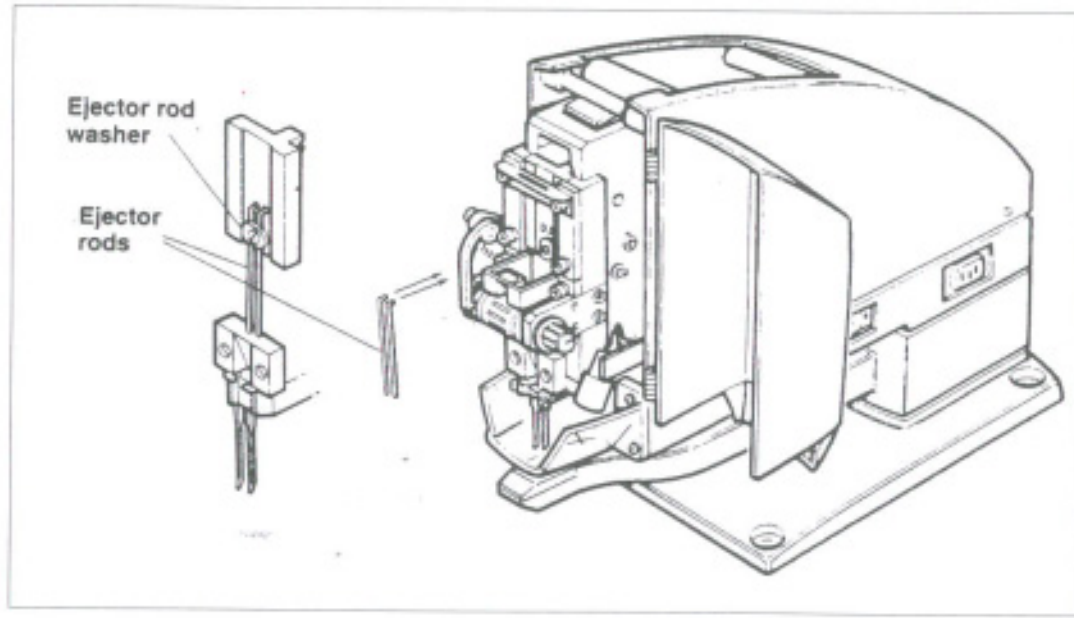
1. Unplug the unit.
2. Open the front door.
3. Remove the needle lock screw.
4. Remove the needle.

Assembly

1. Insert the needle, with the scalloped cut in the needle facing the back of the ST9000.
2. Insert the needle lock screw. (If necessary, rotate the needle so the screw fits into the scalloped cut in the needle.)
3. Tighten the screw.

NOTE The screw lock is designed to prevent squeezing of the hollow needle by the needle lock screw. After the needle lock screw is tightened, the needle may still appear to be loose. This is a normal condition and will not adversely affect fastener insertion.

Replacing the Ejector Rods



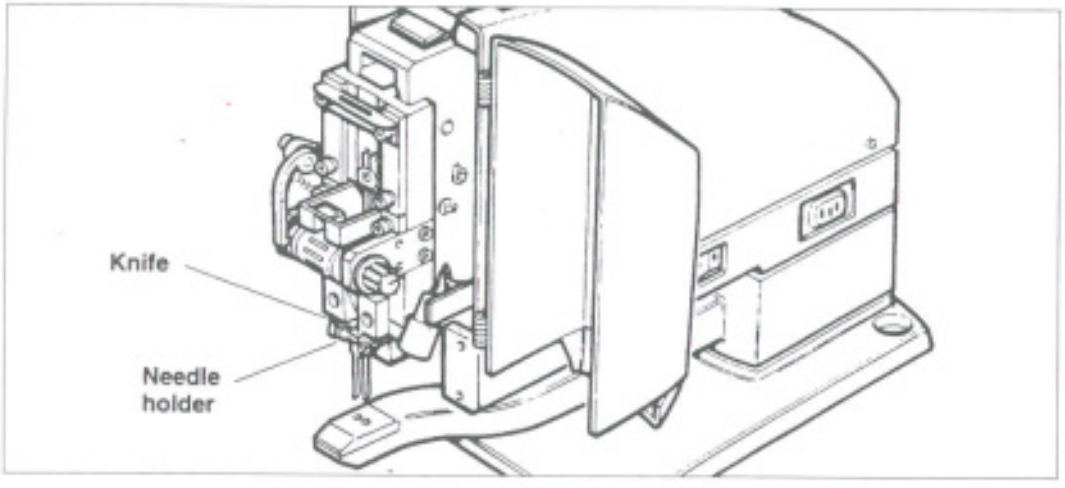
Disassembly

1. Unplug the unit.
2. Open the front door.
3. Loosen the screw holding the ejector rod washer.
4. Rotate the washer to free the ejector rods.
5. Remove the ejector rods.

Assembly

1. Insert the bottom of the ejector rod into the hole in the knife block.
2. Insert the top of the ejector rod into the hole and channel on the ejector slide.
3. Repeat steps 1 and 2 for the second ejector rod.
4. Rotate the ejector rod washer so that it covers both ejector rods.
5. Tighten the screw.

Replacing the Knife

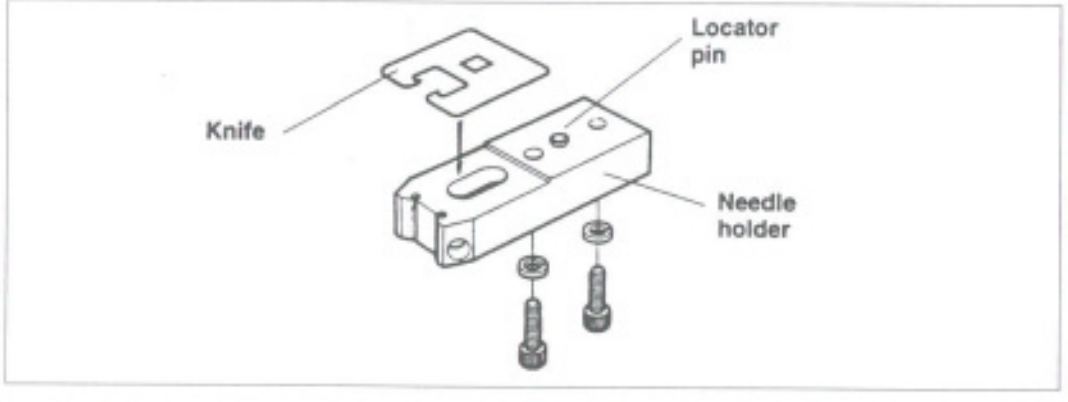


Disassembly

1. Unplug the unit.
2. Open the front door.
3. Remove the needle guard (see page 26).
4. Remove the needles (see page 27).
5. Remove the two screws on the bottom of the needle holder.
6. Remove the needle holder and the knife.

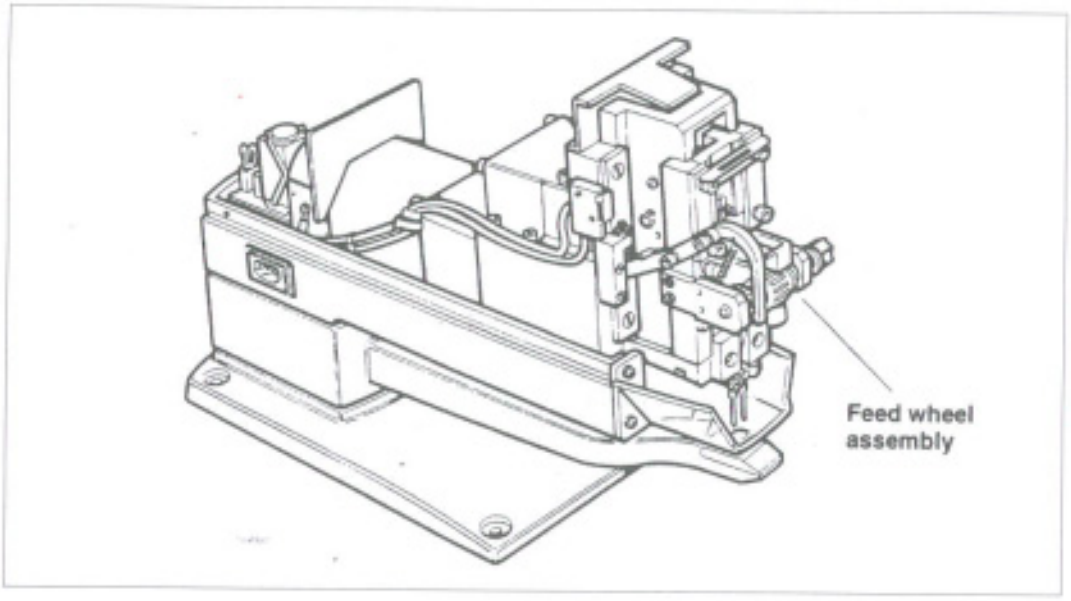
Assembly

1. Orient the knife with the flat side facing up.



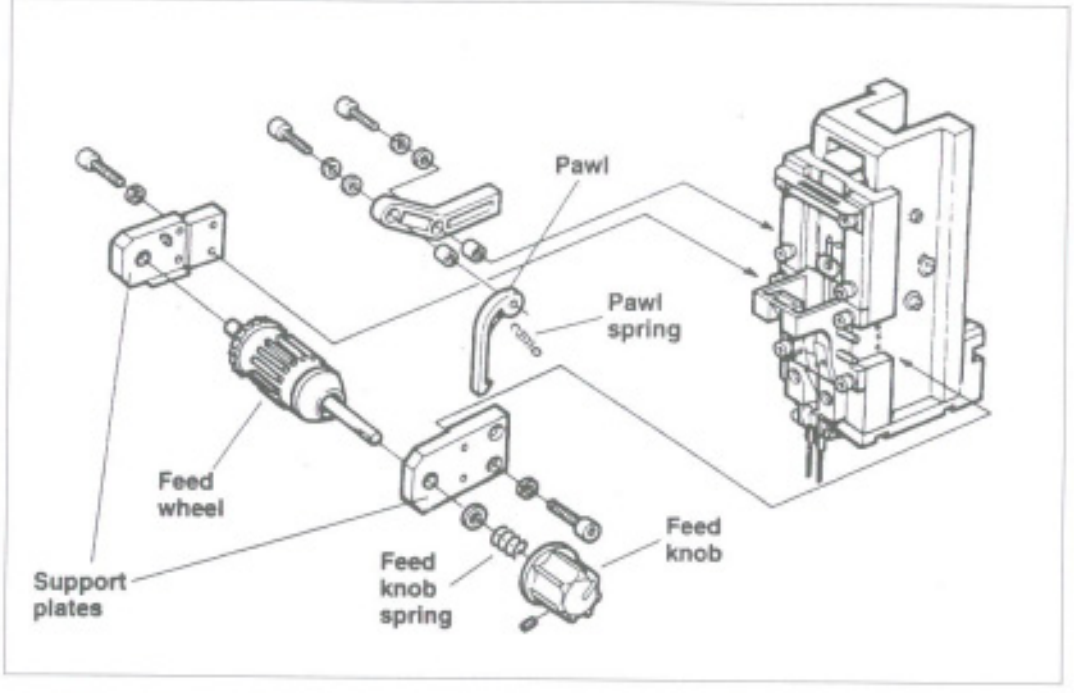
2. Position the square hole in the knife over the square projection that drives the knife.
3. Position the needle holder in the needle holder block, aligning the locator pin in the hole in the needle holder block.
4. Start the screws. Do not tighten the screws in all the way.
5. Check that the knife moves back and forth easily and is seated squarely in the needle holder block.
6. Make sure the needle holder is seated squarely in the needle holder block.
7. Tighten the screws.
8. Double check to make sure the knife moves in and out freely.

Replacing the Feed Wheel



Disassembly

1. Unplug the unit.
2. Disconnect the pawl spring.



3. Remove the two screws holding the left support plate, then remove the plate.
4. Remove the two screws holding the right support plate, then remove the plate and feed wheel.
5. Loosen the set screw on the feed knob, then remove the knob and spring.
6. Remove the right support plate from the feed wheel shaft.

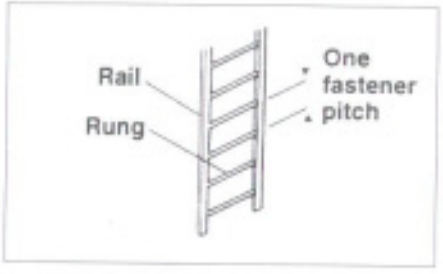
Assembly

1. Slide the right support plate over the feed wheel shaft. (Countersunk holes on the plate face out.)
2. Replace the feed knob spring and knob and tighten the set screw.
3. Reattach the right support plate to the head.
4. Reattach the left support plate.
5. Reattach the pawl spring.

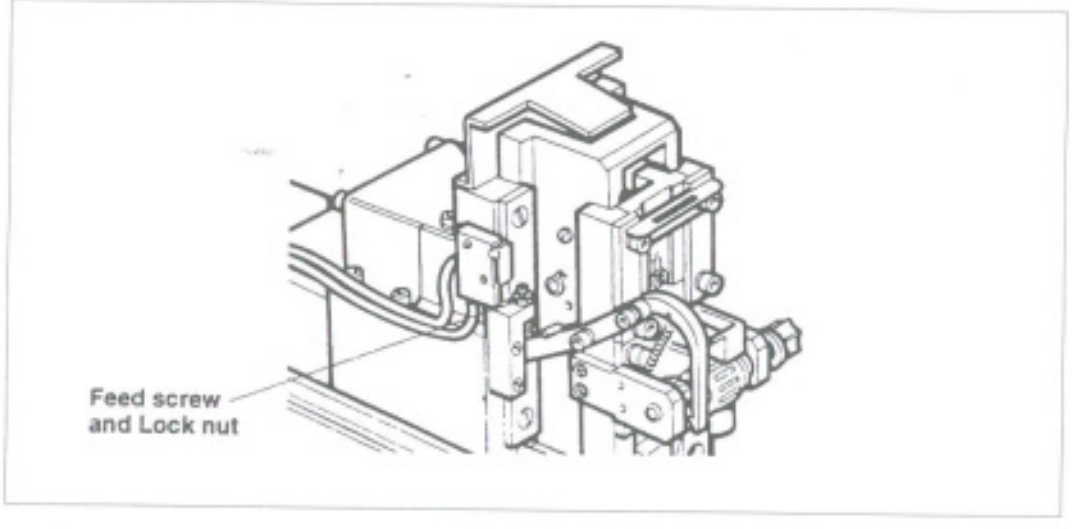
Adjusting the Feed Screw

The feed screw adjusts to advance one fastener pitch only.

The feed screw is set at the factory to advance only one fastener for each cycle and should not require adjustment in the field.

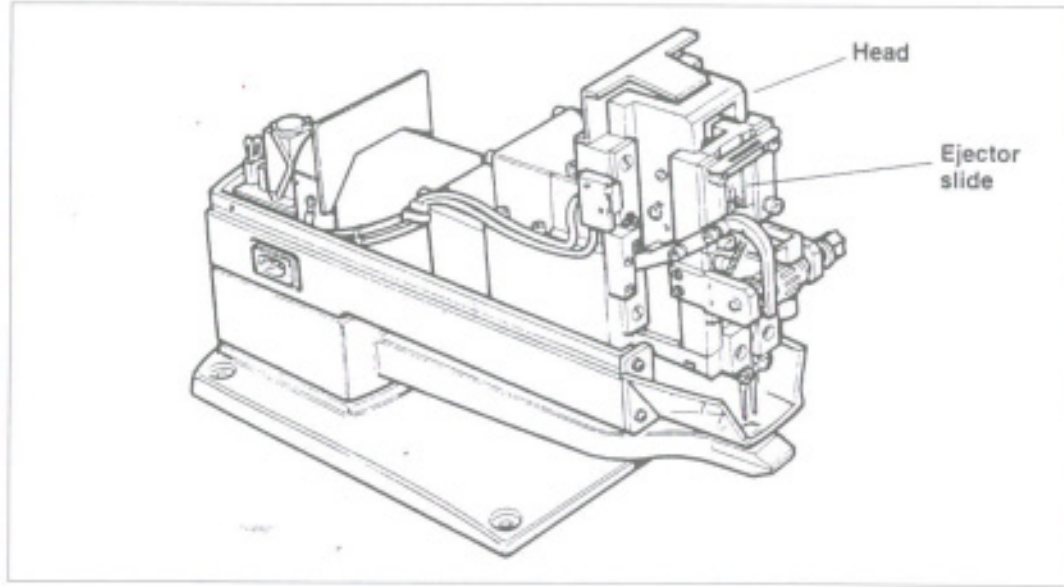


However, if you encounter feed problems where the machine is feeding no fasteners, 1/2 fastener, or 1-1/2 fasteners for each cycle, you should adjust the feed screw as described below.



1. Open the front door.
2. Loosen the lock nut.
3. Back the feed screw all of the way out.
4. Close the front door and cycle the machine once. (The fasteners will not feed.)
5. Turn the feed screw slowly down until only one fastener is feeding per cycle for 25 consecutive cycles. (It does not matter whether the fasteners are being cut midway between two rungs. You will adjust the fastener cut in step 9, below.)
6. Turn the feed screw down two additional turns.
7. Tighten the lock nut.
8. Actuate the machine 25 times to check adjustment.
9. Refer to Adjusting the Fastener Cut on page 18 to adjust the fastener cut.

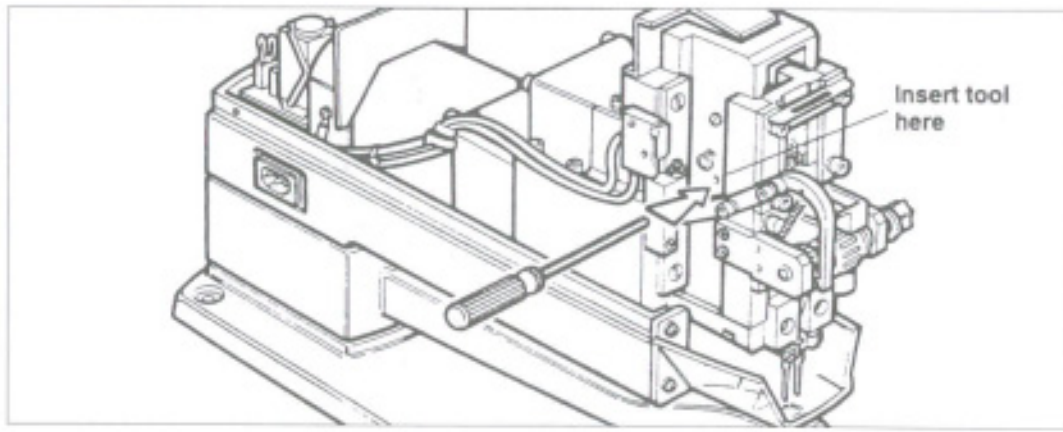
Removing the Head Assembly



Disassembly

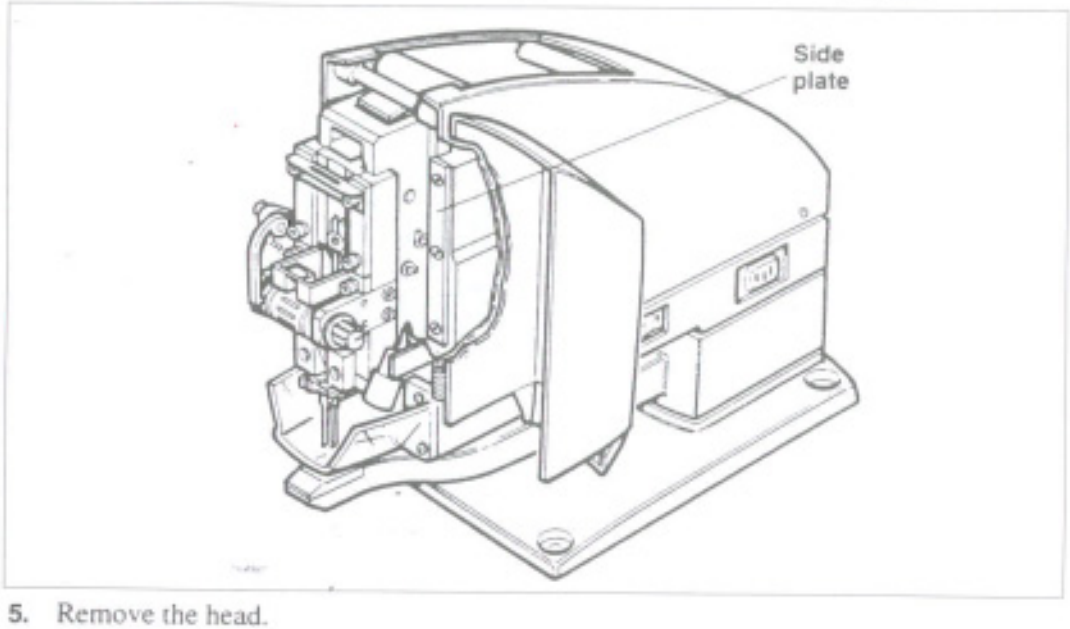
1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. If the ejector slide has not been removed from the head, proceed to step 4.

   If you have already removed the ejector slide from the head, you must insert a long thin screw driver (or similar tool approximately 2.5 mm in diameter) through the hole on the left side of the head.



This tool must engage the teeth on the small gear to prevent the gears from moving. This ensures that the head remains correctly aligned with the rack after you remove the head.

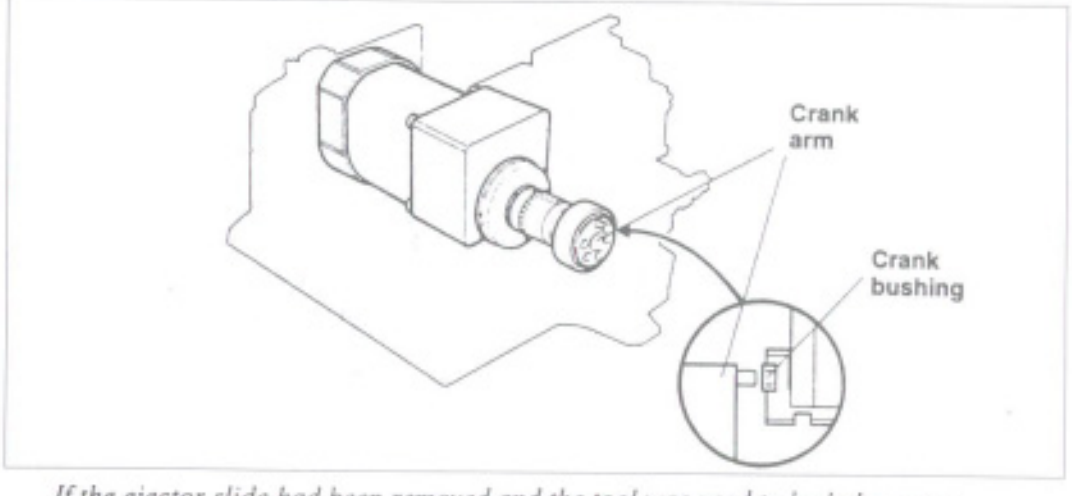
4. Remove the three screws on each side plate, then remove the side plates.



5. Remove the head.

Assembly

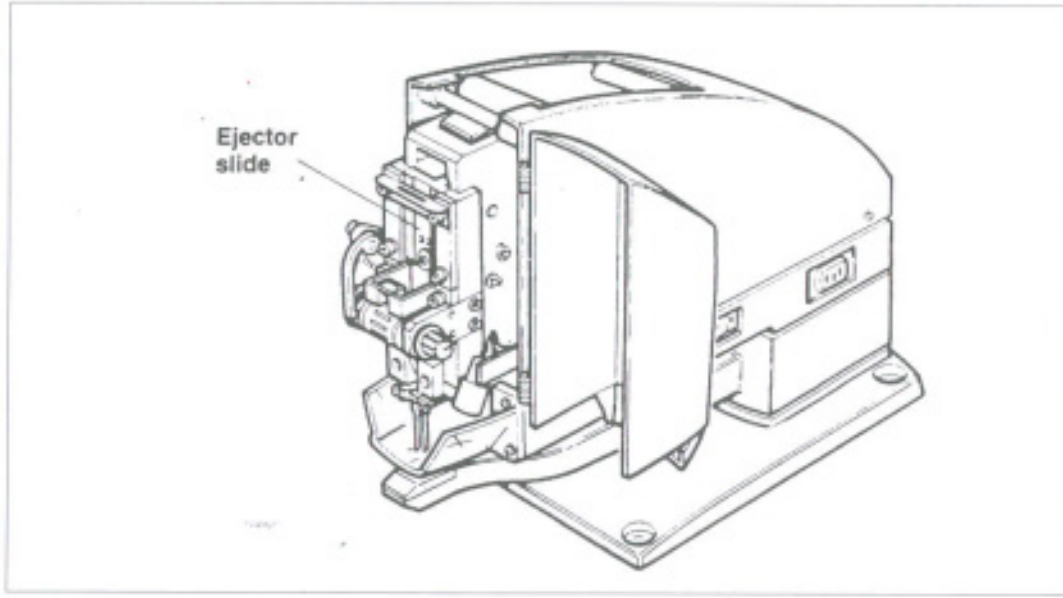
1. Place the crank bushing in the middle of the horizontal track on the back of the head.
2. Rotate the crank arm so the drive pin is at top dead center.



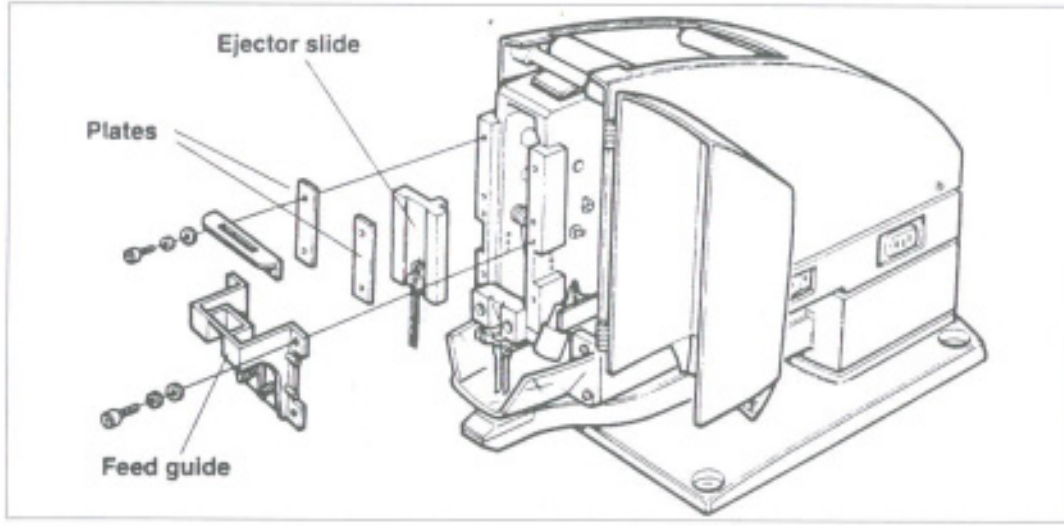
If the ejector slide had been removed and the tool was used to lock the gears, proceed to step 4.

3. Orient the ejector slide to make the top of the slide flush with the top of the slide's guide track.
4. Replace the head, making sure that the crank arm drive pin is in the hole of the crank bushing.
5. Replace the two side plates.

Removing the Ejector Slide

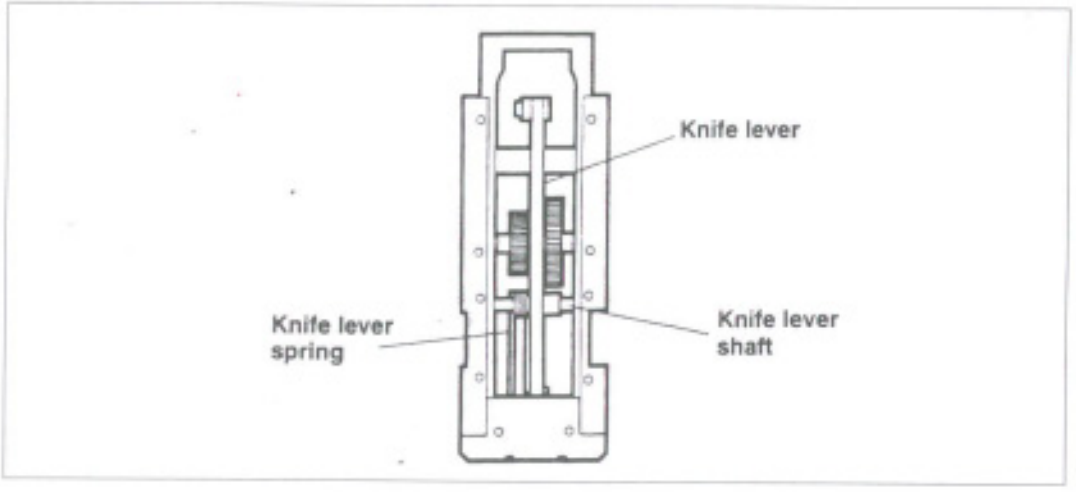


1. Unplug the unit.
2. Remove the feed wheel assembly (see page 31).
3. Remove the four screws holding the feed guide, then remove the feed guide.



4. Remove the four screws from the two screw plates holding the ejector slide, remove the plates and the ejector slide.

Replacing the Knife Lever



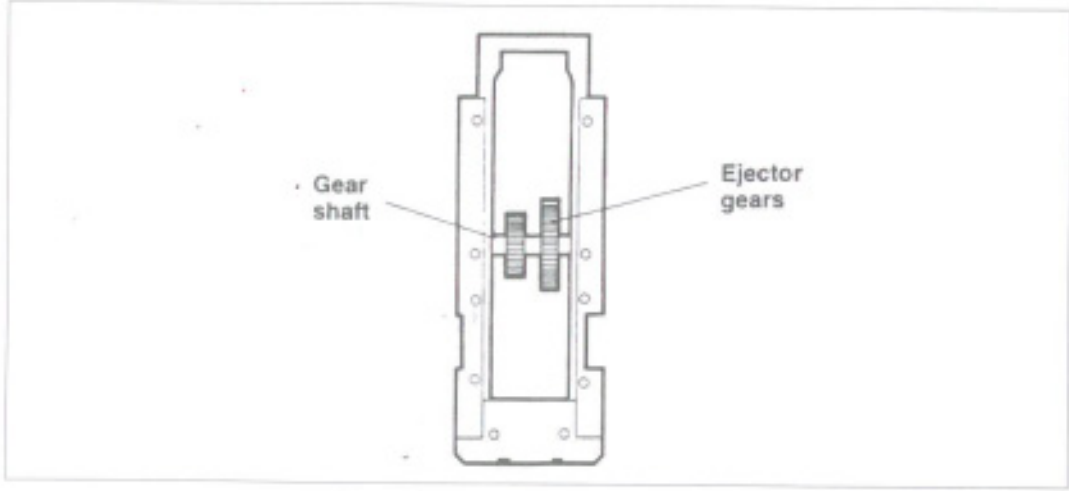
Disassembly

1. Unplug the unit.
2. Remove the feed wheel assembly (see page 31).
3. Remove the feed guide and the ejector slide (see page 36).
4. Disengage the spring from the bottom of the knife lever.
5. Remove the snap ring from the left side of the knife lever shaft.
6. Slide the shaft out and remove the lever and spring.

Assembly

1. Insert the knife lever shaft through the right side of the head, the knife lever, and the spring.
2. Hook the spring to the bottom of the knife lever.
3. With the crank arm at top dead center, replace the ejector slide, positioning the top of the ejector slide flush with the top of the slide's guide track.
4. Holding the ejector slide in place, replace the ejector slide side plates.
5. Replace the feed guide.
6. Replace the feed wheel assembly.

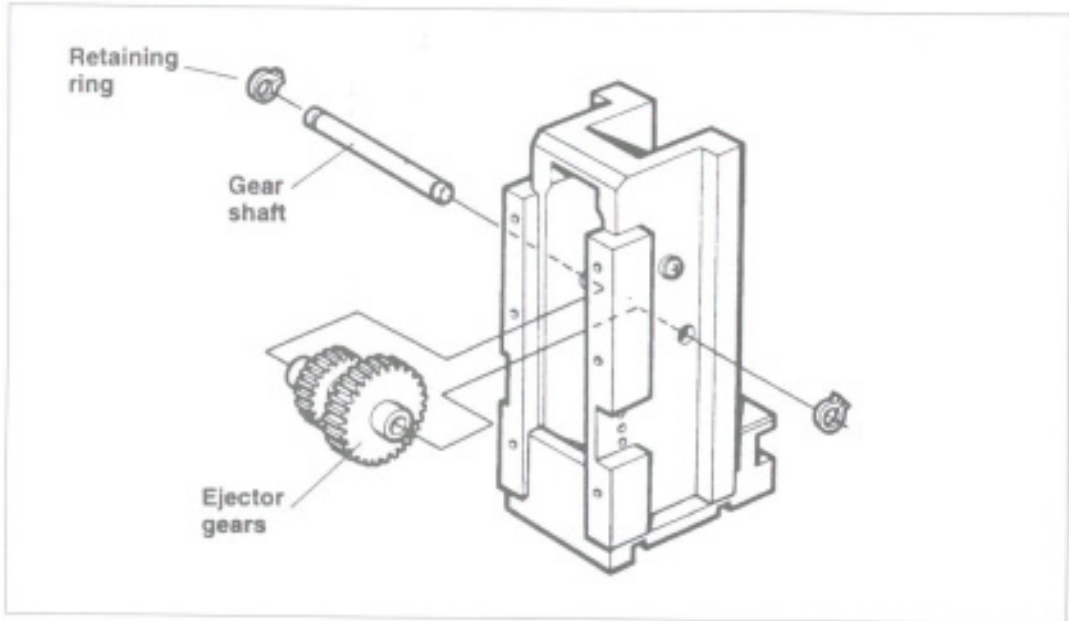
Replacing and Aligning the Gears



NOTE The gears only need to be aligned if you replace them or if you removed the head when the ejector slide was removed and you didn't keep the gears aligned by inserting a tool into the alignment hole in the left side of the head (see page 34).

Disassembly

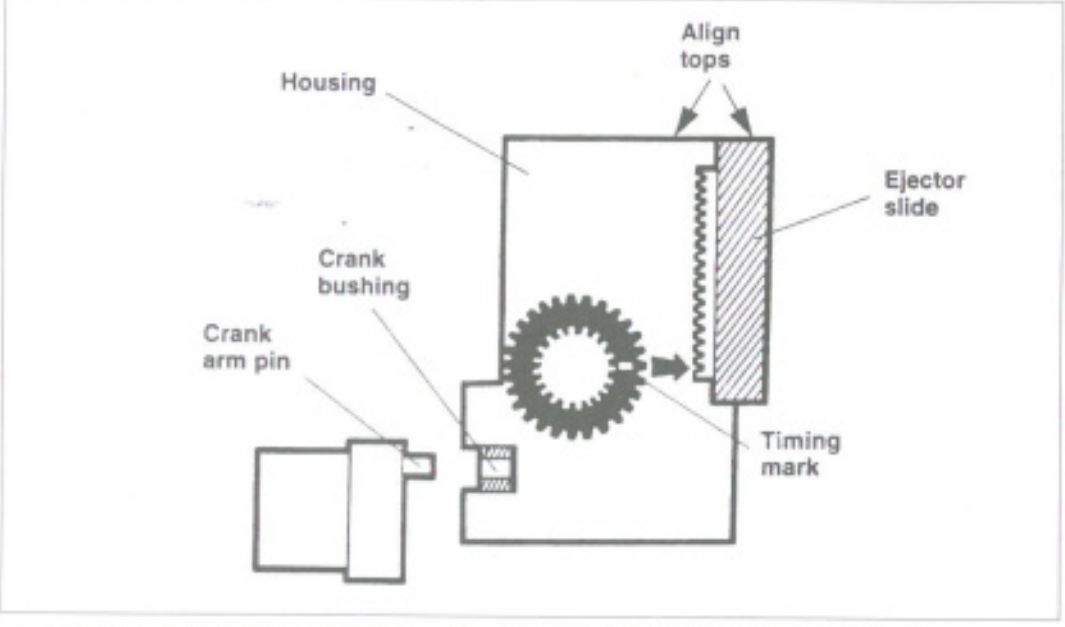
1. Unplug the unit.
2. Remove the feed wheel assembly (see page 31).
3. Remove the feed guide and the ejector slide (see page 36).
4. Remove the knife lever (see page 37).
5. Remove the retaining ring from the left side of the gear shaft.



6. Remove the gear shaft from the head, removing the gears.

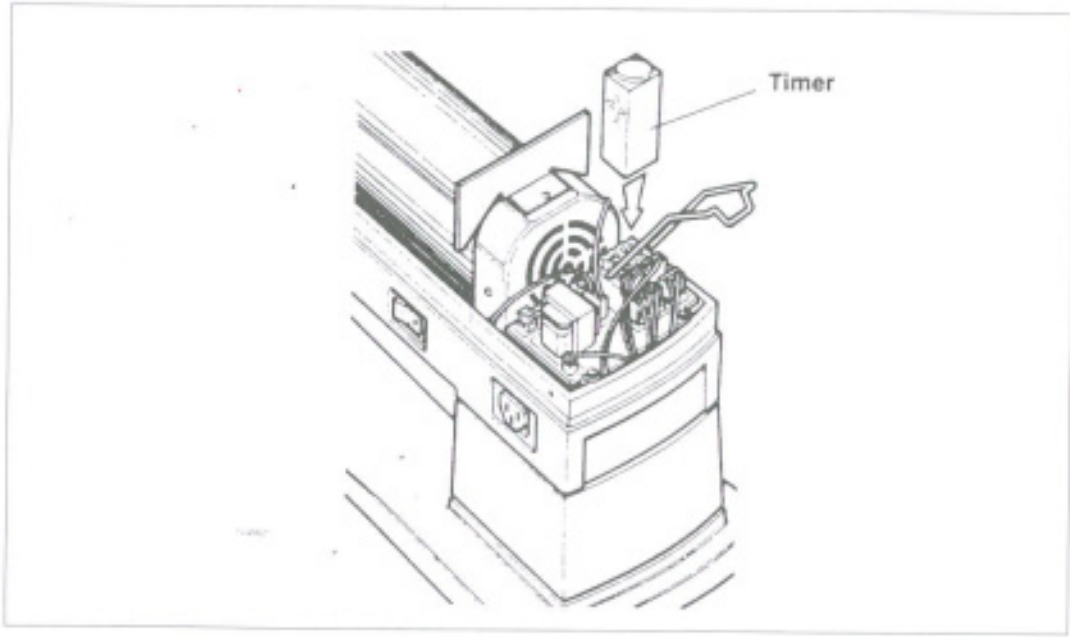
Assembly

1. Hold the gears in the gear slots cut in the head, with the large gear on the right.
2. Insert the gear shaft through the right side of the head and the gears.
3. Replace the snap ring on the left side of the gear shaft.
4. Rotate the gears so that the white timing mark on the large gear is in the front.
5. Align the white timing mark with the bottom tooth of the ejector slide when the head is off the machine.



6. Replace the head by aligning the top of the ejector slide with the top of the slide's guide track.
7. Make sure the crank arm pin is at top dead center, then insert the crank arm pin into the crank bushing.
8. Replace the head side plates and screws.
9. Remove the ejector slide.
10. Replace the knife lever and spring.
11. Lubricate the gears with grease (see Lubrication on page 54).
12. Replace the ejector slide, positioning the top of the ejector slide flush with the top of the slide's guide track.
13. Replace the feed guide.
14. Replace the feed wheel assembly.

Replacing the Timer



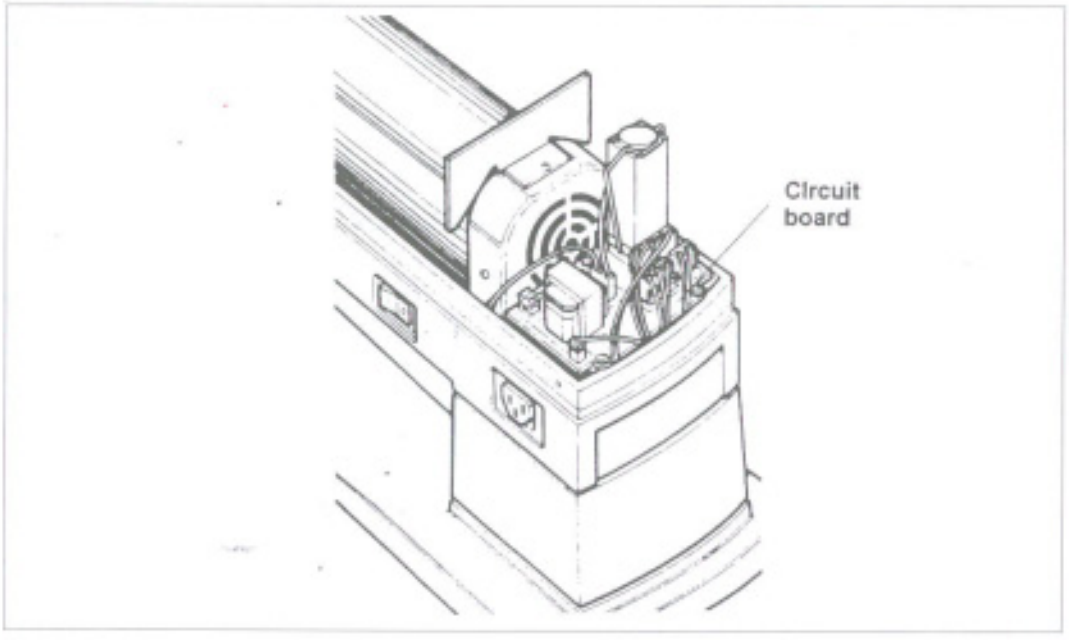
Disassembly

1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. Release the spring clip holding the timer to the circuit board.
4. Remove the timer from the circuit board.

Assembly

1. Insert the timer in the socket on the circuit board.
2. Replace the spring clip holding the timer to the circuit board.
3. Replace the enclosure and reel support.

Replacing the Circuit Board



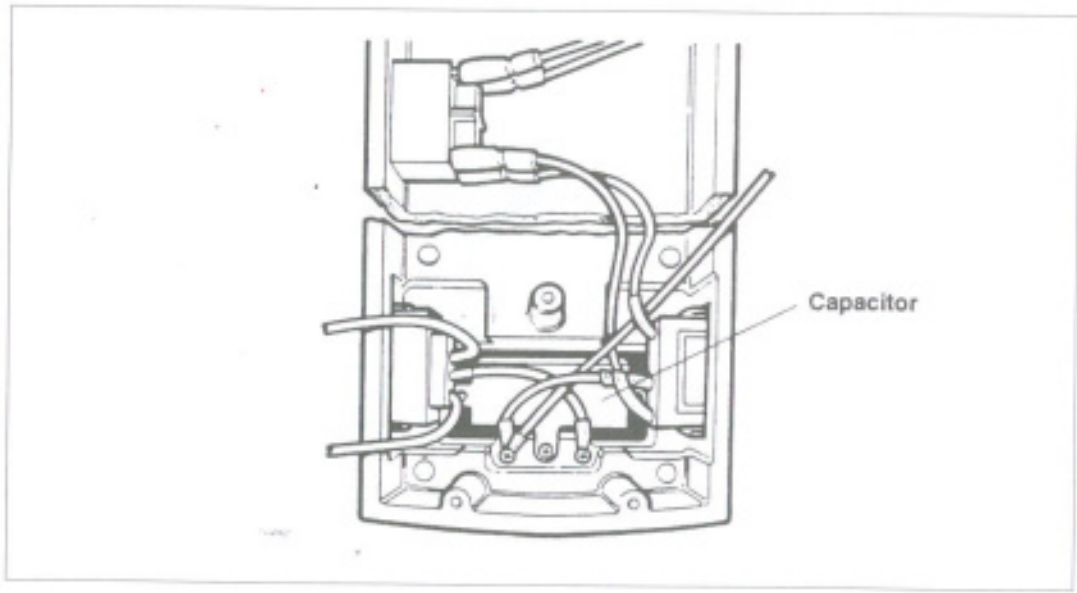
Disassembly

1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. Disconnect the four color-coded two-pin connectors from the circuit board.
4. Disconnect the three pin connector.
5. Disconnect the small two-pin connector. (You may need to press a sharp tool in the hole on the side of the socket to release the connector.)
6. Remove the three screws holding the circuit board.
7. Remove the circuit board.

Assembly

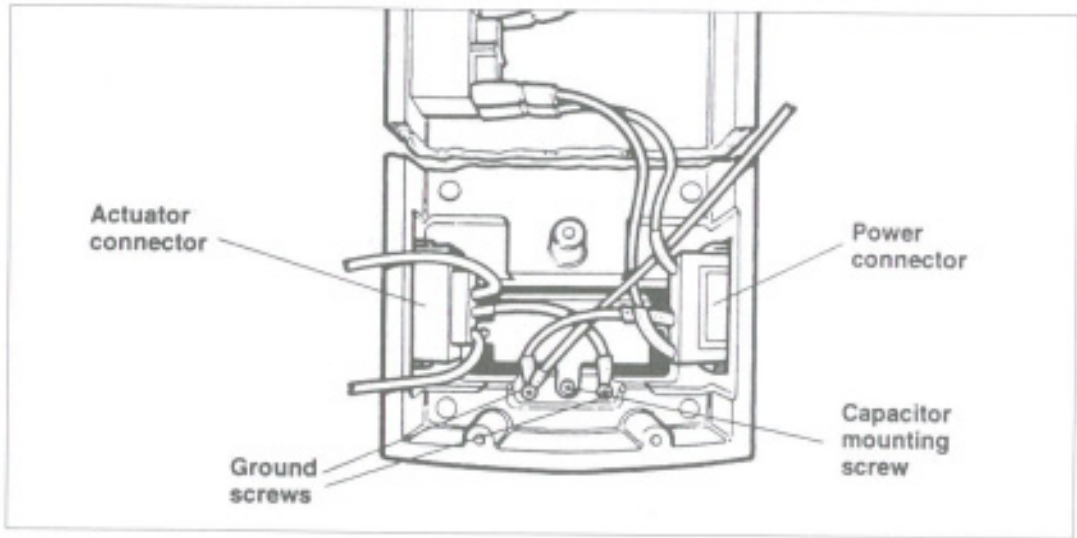
1. Position the circuit board so the three holes in the board align with the screw holes in the frame.
2. Insert and tighten the three screws.
3. Connect the small two pin connector.
4. Connect the large three pin connector.
5. Connect the four color-coded two-pin connectors.
6. Replace the enclosure and reel support.

Replacing the Capacitor



Disassembly

1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. Remove the circuit board (see page 41).
4. Remove the two ground screws.

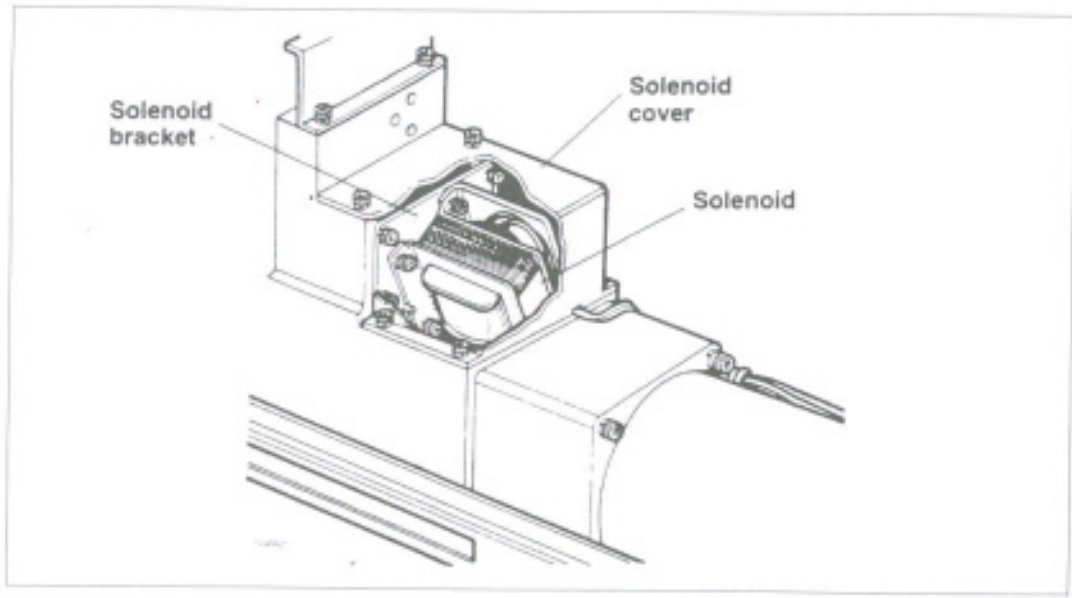


5. Release the power and actuator connectors from the frame by squeezing the tabs on the side of each connector and pushing the connector outward.
6. Grasp the capacitor bracket with needle nose pliers to prevent the capacitor from falling into the frame.
7. Remove the screw holding the capacitor, then remove the capacitor.

Assembly

1. Grasp the capacitor bracket with needle nose pliers and position the capacitor upside down in the hole under the circuit board.
2. Insert and tighten the screw that holds the capacitor.
3. Replace the three ground wires and the two ground screws, then tighten the screws.
4. Snap the power connector and the actuator connector into the frame.
5. Replace the circuit board, then insert and tighten the three screws that hold the circuit board.
6. Connect the six connectors to the circuit board.
7. Replace the enclosure and the reel support.

Replacing the Solenoid Assembly



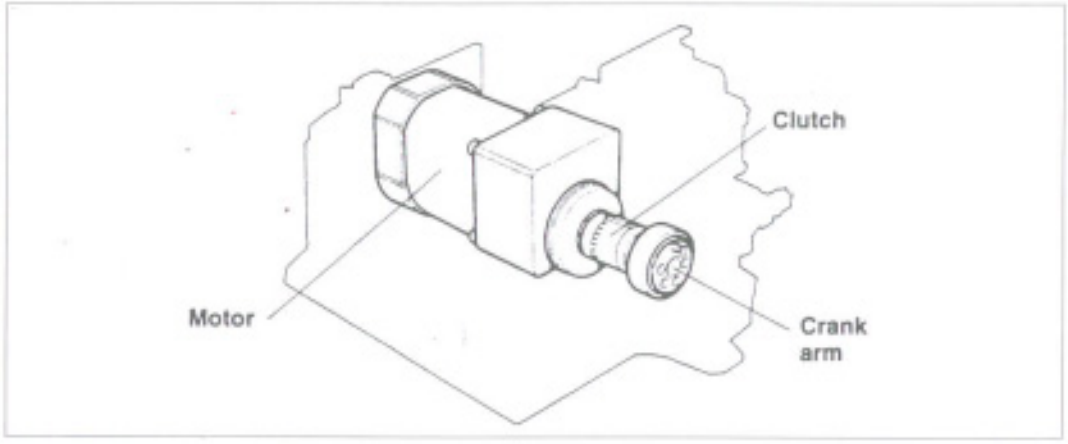
Disassembly

1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. Remove the six screws holding the solenoid cover, then remove the cover.
4. Disconnect the solenoid's connector (blue two-pin) from the circuit board.
5. Remove the four screws holding the solenoid bracket to the mount.

Assembly

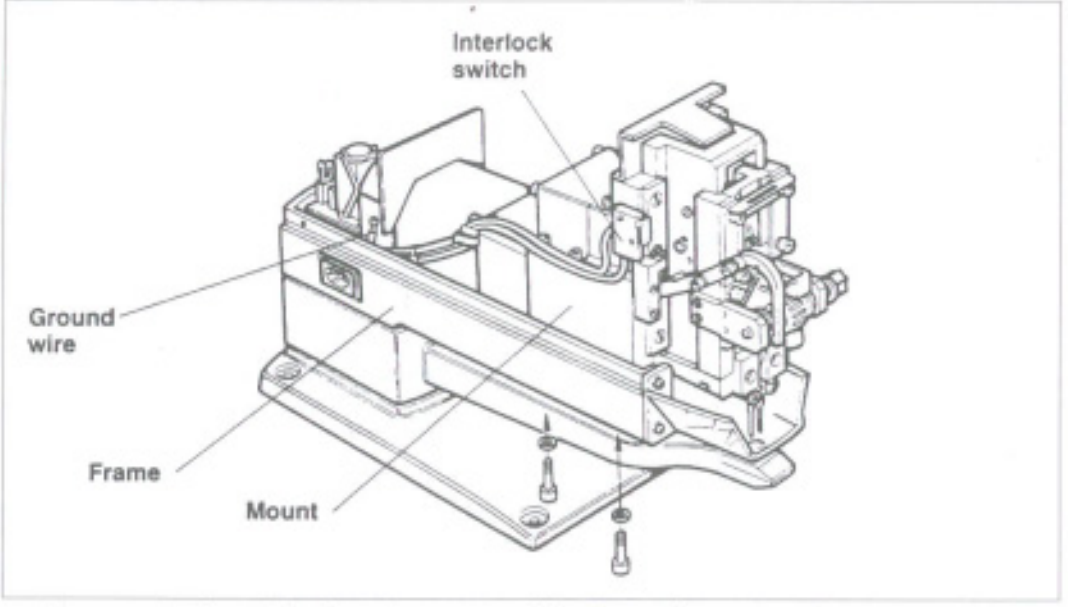
1. Position the solenoid assembly so the four holes in the solenoid bracket align with the four holes in the mount.
2. Insert the four screws and tighten.
3. Connect the solenoid's connector (blue two-pin) to the circuit board.
4. Replace the solenoid cover, passing the solenoid wires through the notch in the cover.
5. Insert and tighten the six screws holding the solenoid cover.
6. Replace the enclosure and the reel support.

Replacing the Motor, Clutch, and Crank Arm Assembly



Disassembly

1. Unplug the unit.
2. Remove the reel support and the enclosure.
3. Unplug the motor, interlock switch, solenoid, and light connectors from the circuit board.
4. Remove the ground wire from the motor housing.

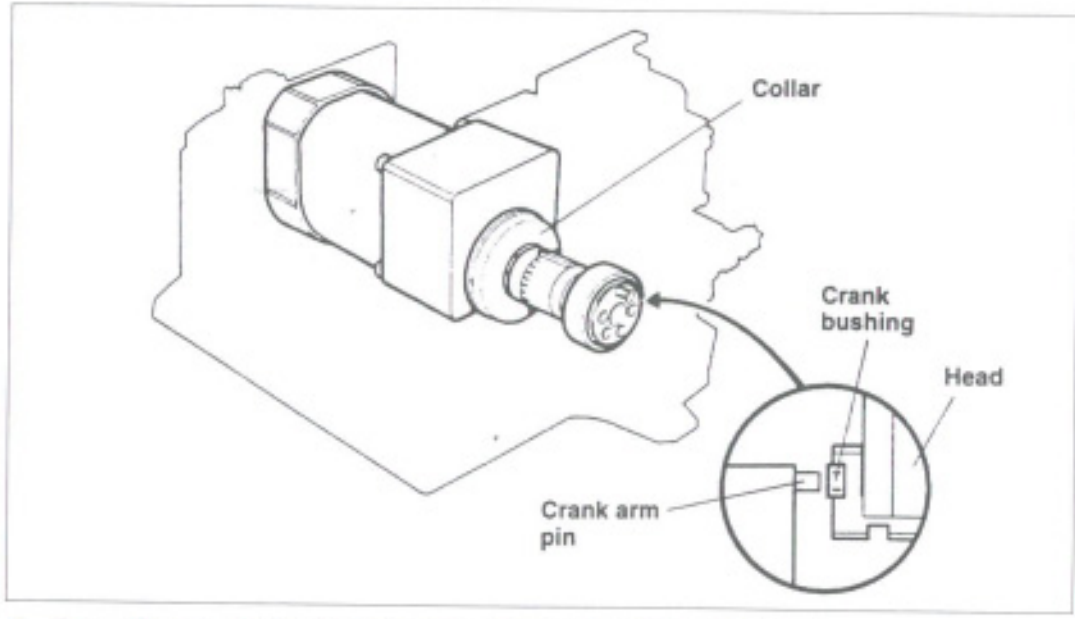


5. Remove the four bolts from the bottom of the frame that secure the mount.
6. Raise the motor assembly and disconnect the two wires to the power switch.
7. Remove the motor, clutch, crank arm, and mount as one assembly.

8. Remove the four bolts holding the motor to the mount.
9. Remove the motor, clutch, and crank arm from the mount. (If necessary, gently tap the collar from inside the mount to release it.)

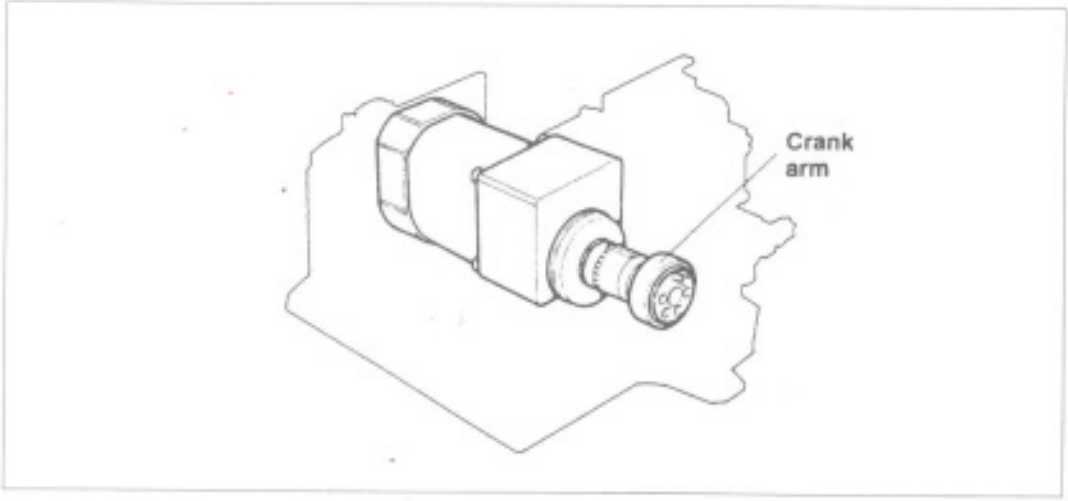
Assembly

1. Make sure the head is in the top position.
2. Make sure the crank bushing is in the center of the horizontal track on the back of the head.
3. Make sure the crank arm pin is at top dead center.



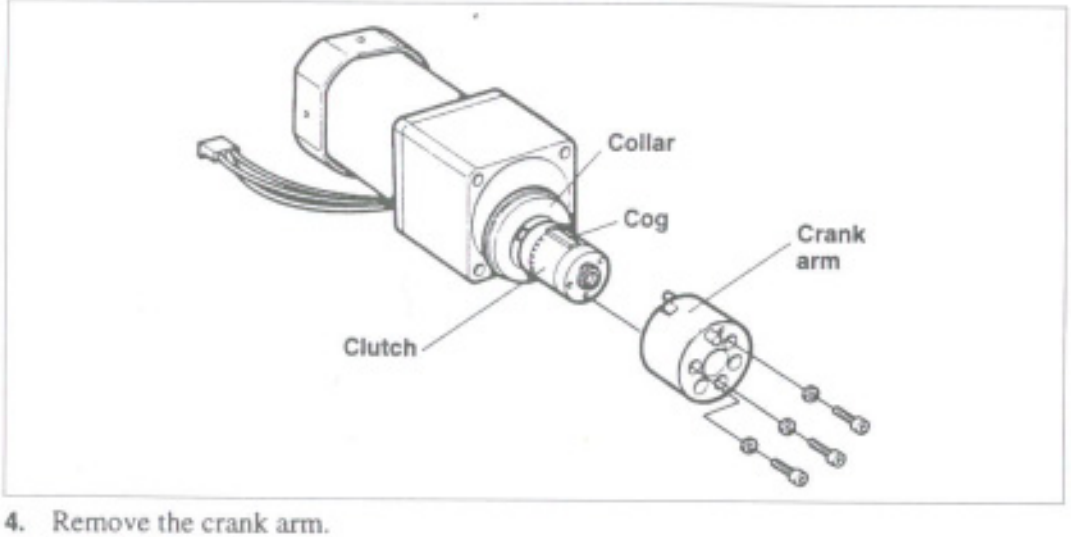
4. Insert the motor, clutch, and crank arm assembly into the mount.
5. Slowly insert the assembly into the frame. You must insert the pin extending from the crank arm into the bushing on the back of the head.
6. Press the collar into the hole in the frame.
7. Replace and tighten the four screws that hold the motor, clutch, and crank arm assembly to the mount.
8. Connect the two wires to the power switch.
9. Replace the motor, mount, and head assembly in the frame, then insert and tighten the four screws that secure the mount.
10. Replace the ground wire on the motor housing.
11. Connect the motor, interlock switch, solenoid, and light connectors from the circuit board.
12. Replace the enclosure and the reel support.

Removing the Crank Arm



Disassembly

1. Unplug the unit.
2. Remove the motor, clutch, and crank arm assembly (see page 45).
3. Remove the three screws holding the crank arm to the clutch.

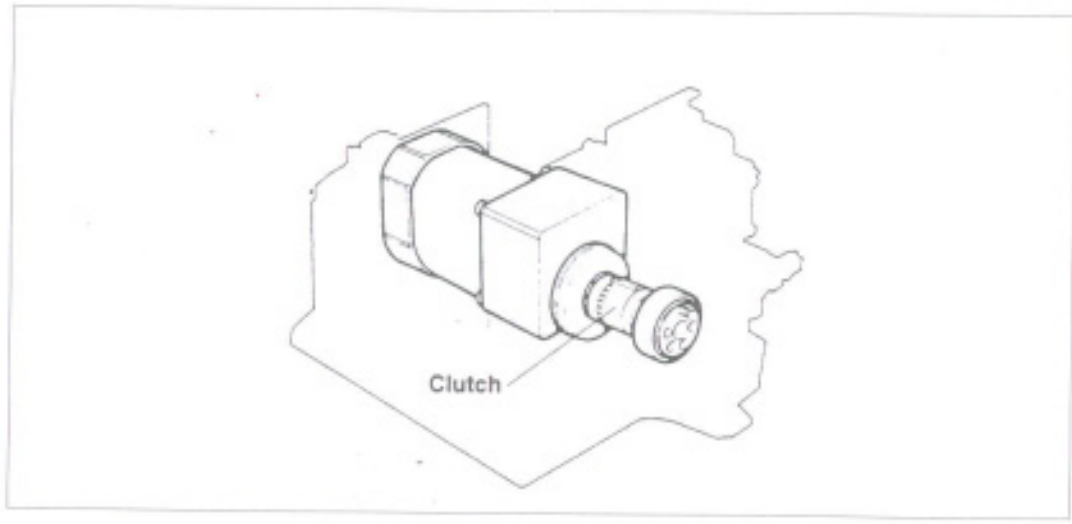


4. Remove the crank arm.

Assembly

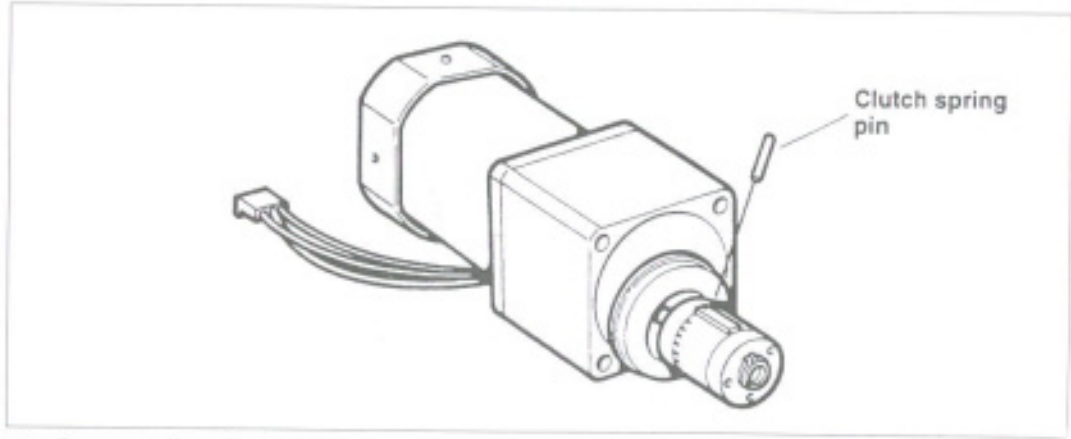
1. Make sure the collar is on the drive shaft before replacing the crank arm.
2. Place the crank arm on the face of the clutch, aligning the smaller pin on the crank arm with the cog on the clutch.
3. Insert and tighten the three screws.

Removing the Clutch



Disassembly

1. Unplug the unit.
2. Remove the motor, clutch, and crank arm assembly (see page 45).
3. Remove the crank arm (see page 47).
4. Remove the spring pin that goes completely through the clutch and drive shaft by tapping gently with a small hammer and punch.



5. Remove the clutch.

Assembly

1. Place the clutch on the drive shaft.
2. Align the pin hole in the clutch with the pin hole in the drive shaft.
3. Gently tap the clutch spring pin into the hole.
4. Reassemble the motor, clutch, and crank arm assembly.

Chapter 6

Troubleshooting

This chapter describes symptoms, possible causes, and solutions for problems you may encounter when operating the ST9000.

The symptoms are divided into four categories:

- ❒ ST9000 doesn't actuate (head does not move)
- ❒ Head stalls or slows down
- ❒ Fastener problems
- ❒ Ejection problems

Operational Check

NOTE | After repair or reassembly, always perform the following operational check.

1. Replace the ST9000 enclosure and needle guard.

⚠ WARNING | **Do not operate the machine with the enclosure and needle guards removed. Needles and moving parts may cause serious personal injury.**

2. Make sure the Power Switch is OFF (O) and plug in the power cord. The ST9000 should not cycle.
3. Turn the Power Switch ON (I). Check that motor is running.
4. Press the foot switch. The ST9000 should cycle once and then stop.
5. Load fasteners and test for correct fastener cut and insertion.

ST9000 Doesn't Actuate

Symptom	Probable cause	Action
ST9000 doesn't actuate, motor not running	Power is off	Check that ST9000 is plugged in and power is on.
	Front door is not fully closed	Close door.
	Faulty electrical connections	Check for loose or disconnected wires.
ST9000 doesn't actuate, motor is idling	Timer is bad	Replace timer.
	Solenoid is bad	Replace Solenoid.
	Faulty electrical connections	Check for loose or disconnected wires.
	Faulty foot switch	Replace foot switch.
Cycling constantly	Timer or solenoid is bad	Turn off the power, then turn power back on. If it immediately starts cycling continuously, it is probably the solenoid, possibly the timer. If the ST9000 is not continuously cycling, actuate it once. If it begins cycling continuously again, replace timer.
Intermittent cycling	Faulty foot switch	Replace the foot switch.
	Solenoid is bad	Replace the solenoid. If replacing solenoid doesn't fix the problem, replace timer.

Head Stalls or Slows Down

Symptom	Probable cause	Action
Head jamming in down position	Worn clutch	Shut off the ST9000. Pull head up manually and try again. Inspect clutch and replace if worn.
Penetration problems, or head jamming in material that it worked in before	Worn clutch Bent or broken needle	Inspect clutch and replace if worn. Replace needle.
Slow cycling (Head moves up and down slower than normal.)	Worn clutch	Inspect clutch and replace if worn.

Fastener Problems

Symptom	Probable cause	Action
Feed jam of fasteners	Bad fastener cut	Back out and recut fastener end. Then refeed fasteners.
	Not feeding one fastener pitch	Adjust feed screw.
	Contamination of the feed guide, needles, or needle holder	Clean the fastener path with compressed air. (See Warning below.)
Fastener not being cut	Knife incorrectly installed or dull	Make sure the flat edge of the knife is facing up.
	Broken knife cam spring	Replace spring.
More or less than one fastener feeding each cycle	Feed screw out of adjustment	Adjust screw.
Fastener not being cut in center	Feed knob out of adjustment	Adjust by pushing in feed knob.

⚠ WARNING **Always wear eye protection when using compressed air.**

Ejection Problems

Symptom	Probable cause	Action
Fastener not ejecting.	Bent ejector rods	Replace rods.
Ejector rods bending	Ejector slide not installed correctly	Readjust slide.
	Knife too tight	Check that knife can move freely.
	Broken knife lever spring	Replace spring.

Chapter 7

Routine Maintenance and Lubrication

This chapter describes the routine maintenance and lubrication that the ST9000 requires.

Daily Maintenance

You should blow out the Plastic Staple path daily with compressed air to remove dust and any contaminants.

This is the only daily maintenance required.

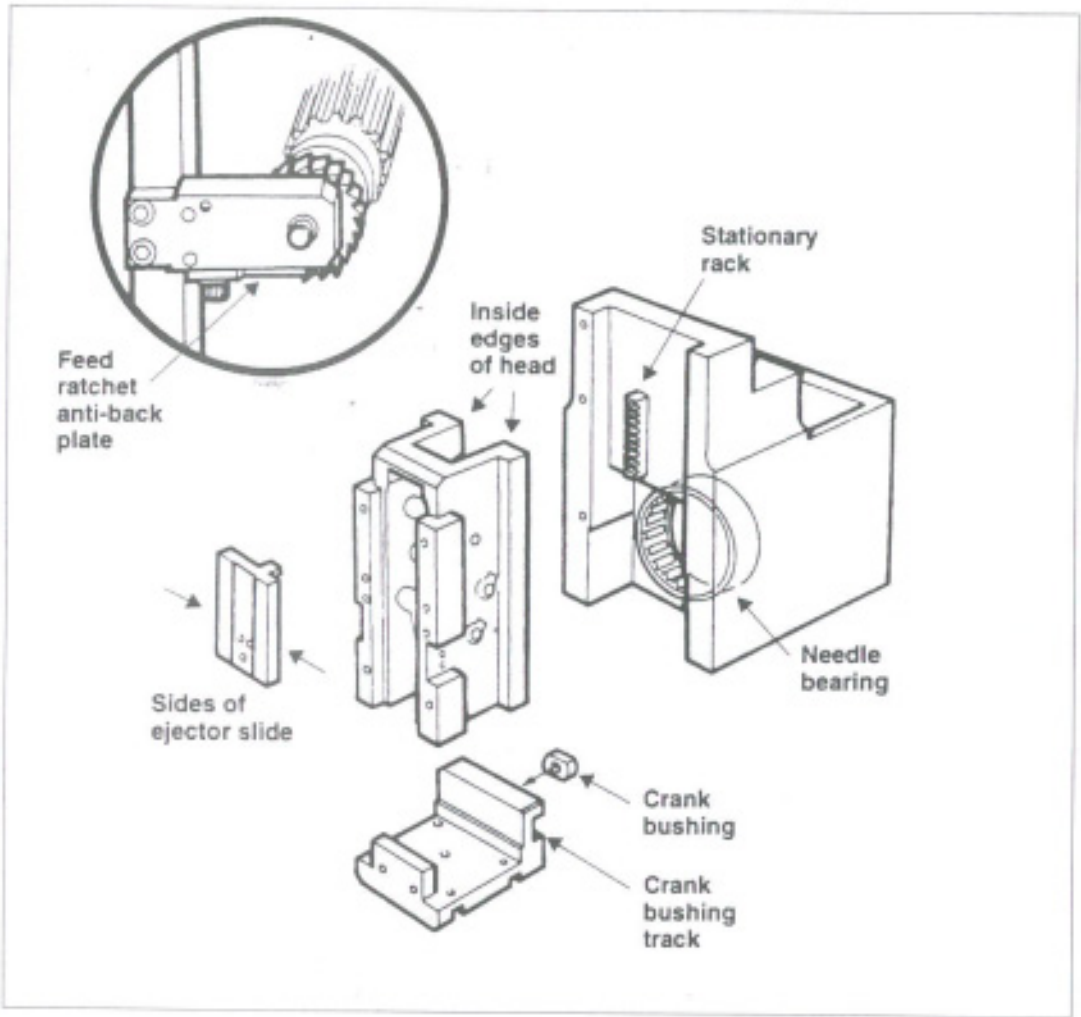
CAUTION	**Do not use any type of lubricant on the fastener path. Use only compressed air to clean it. Do not use any solvents on the ST9000.**

⚠ WARNING	**Always wear eye protection when using compressed air.**

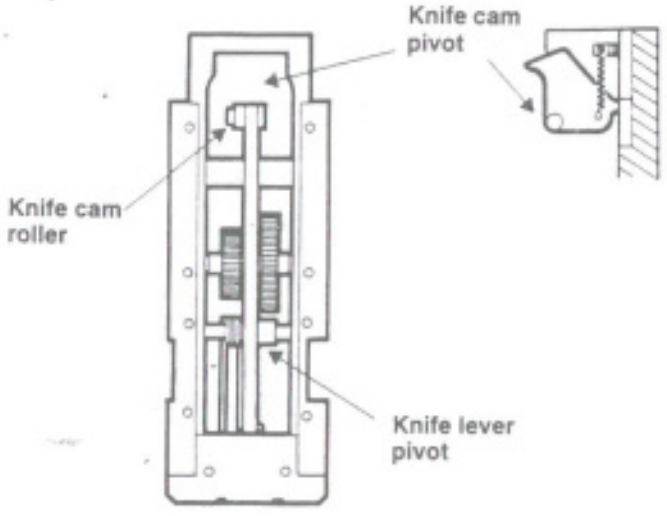
Lubrication

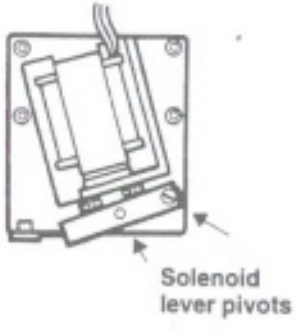
You should lubricate the ST9000 approximately every six months or one million cycles.

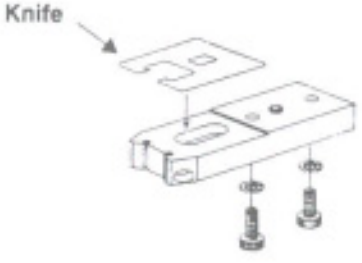
The following areas should be lubricated with a light grease:

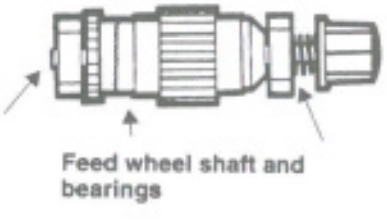


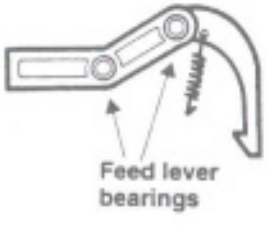
The following areas should be lubricated with a light sewing machine oil:











Chapter 8

Parts List

This chapter contains an illustrated parts list to enable you to locate parts you require to maintain and service the ST9000 Plastic Staple Attacher.

To locate part numbers and descriptions, match the key numbers in the illustrations with the key number column in the parts list.

Ordering Parts

To order a replacement part, contact:

Avery Dennison Corporation
Fastener Division Customer Service
One Clarks Hill
Framingham, MA 01701-8164
Telephone: 1-800-225-5913 (Outside MA)
Telephone: 508-879-0511 x5800 (Inside MA)

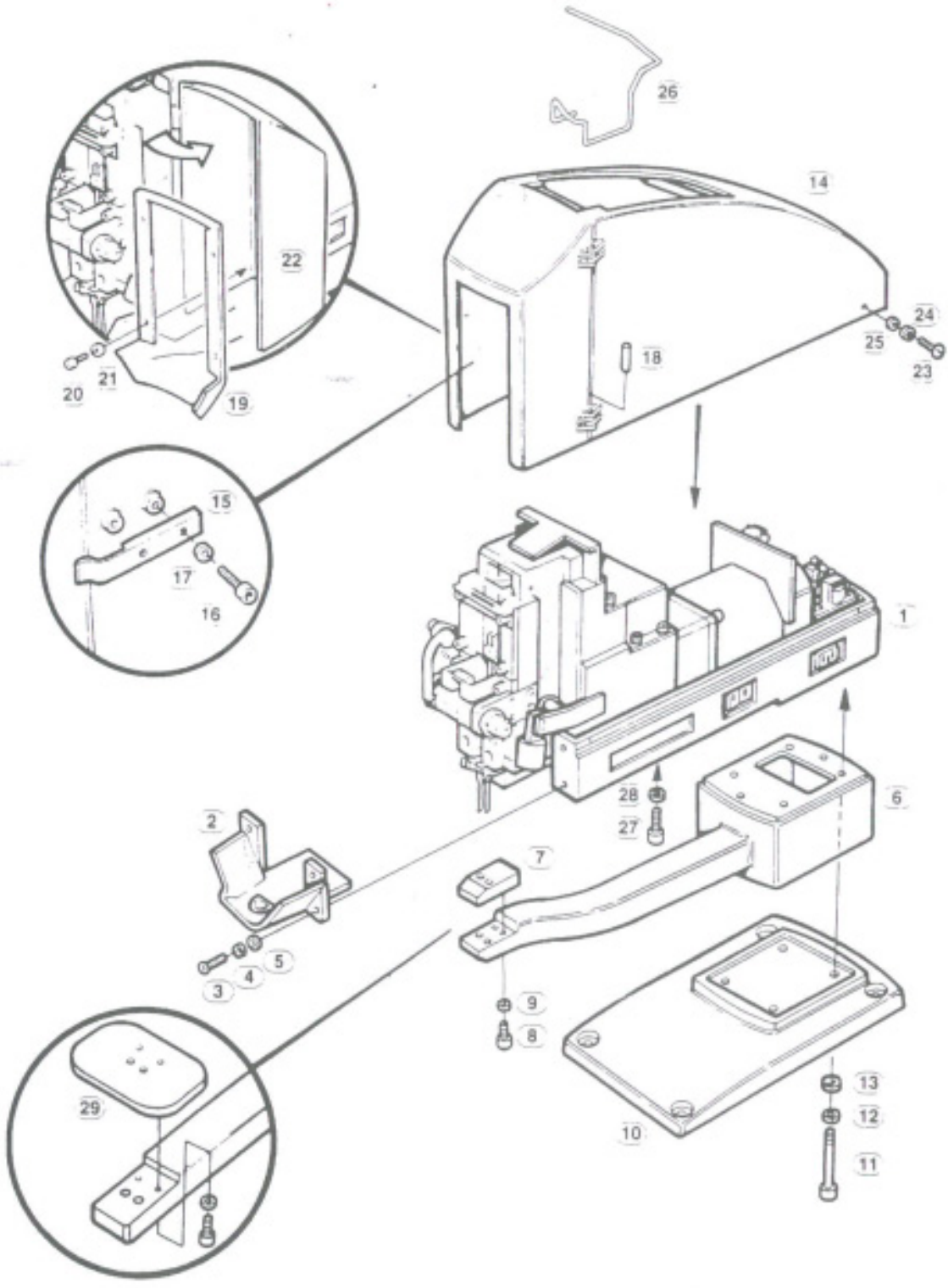
You will need to supply the following information:

- ❒ The Avery Dennison part number and description from the list in this chapter.
- ❒ The model number and serial number from the name plate on the ST9000.

Factory Service

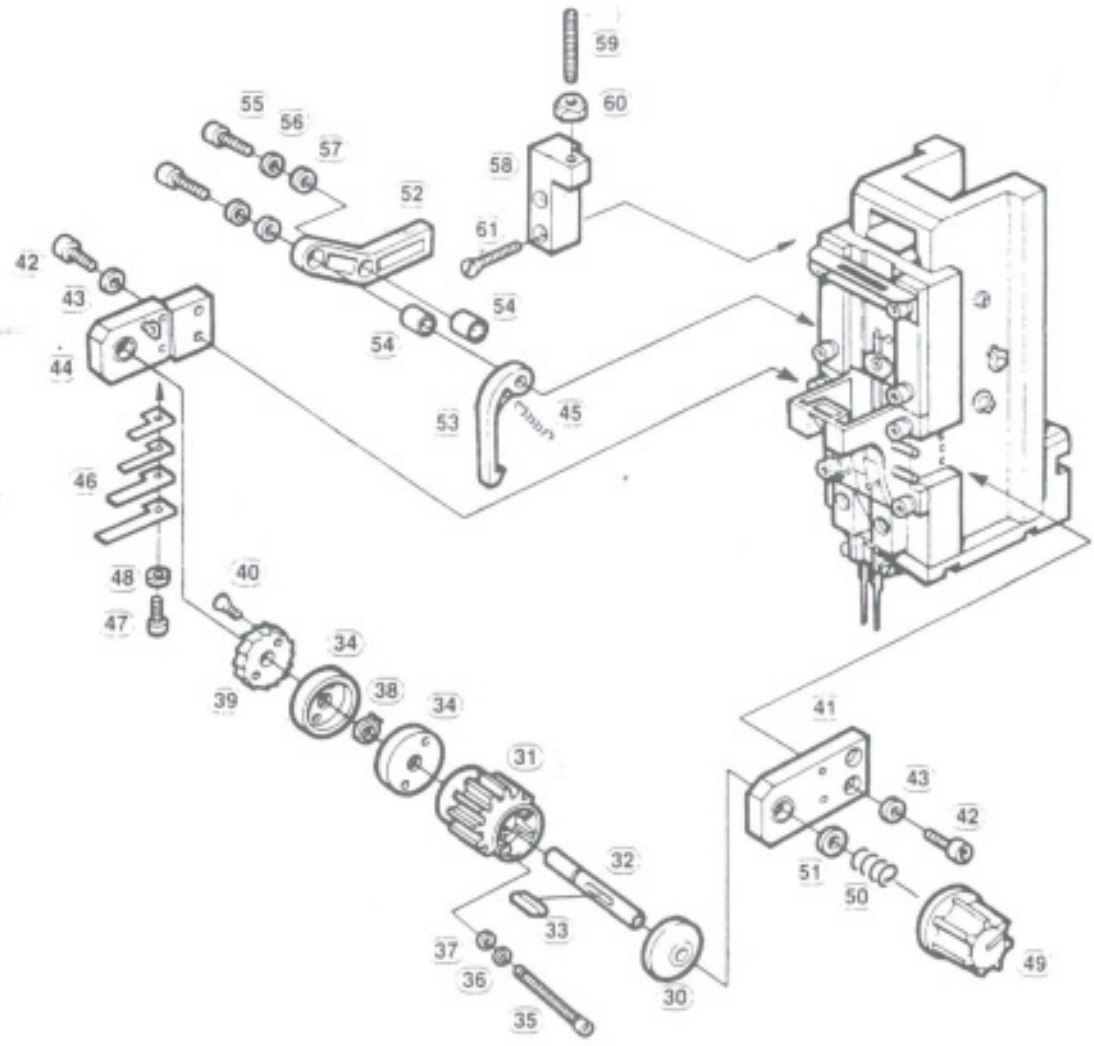
Depot factory service is available. Contact your local Fastener Division sales specialist.

Enclosure, Frame, and Reactor Arm



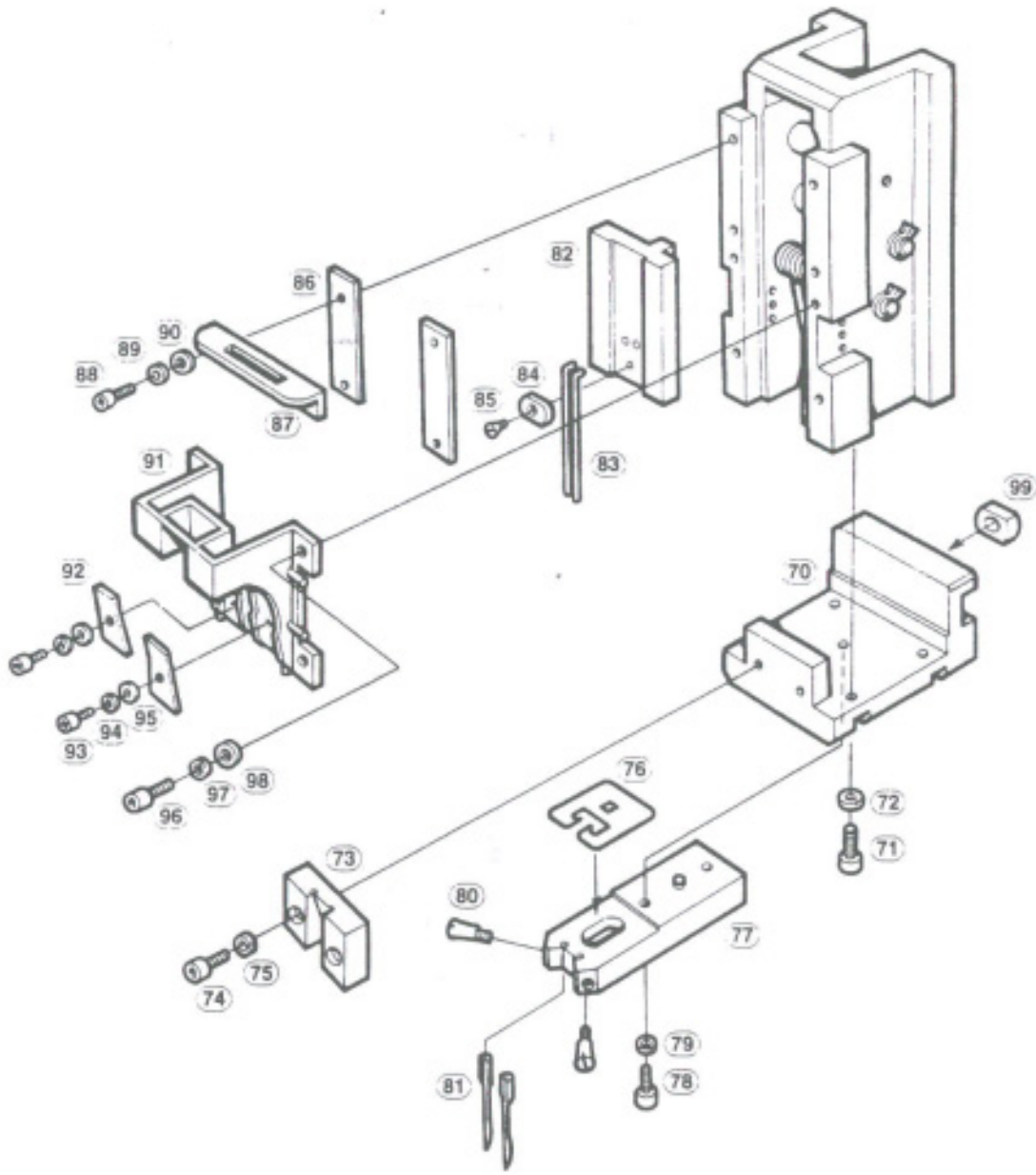
Key #	Part Number	Description	Qty.
1	DT0002-001	Assembly, frame	1
2	DT0007-001	Needle guard	1
3	DT0029-001	Button screw M4 x 8mm	4
4	028040-242	Lock washer M4	4
5	026040-136	Washer M4	4
6	DT0008-001	Assembly, reactor arm	1
7	DT0010-001	Reactor plate, Standard ST9000	1
8	018400-831	Screw M4 x 8mm	2
9	028040-242	Lock washer M4	2
10	DT0012-001	Base	1
11	018089-531	Screw M8 x 95mm	4
12	028080-242	Lock washer M8	4
13	025080-132	Washer M8	4
14	DT0013-001	Assembly, enclosure	1
15	DT0018-001	Spring, front door	1
16	018300-631	Screw M3 x 6mm	2
17	028030-242	Lock washer M3	2
18	DT0022-001	Pin, hinge	2
19	DT0027-001	Door, needle guard	1
20	018300-631	Screw M3 x 6mm	4
21	DT0028-001	Washer M3 x 12	4
22	DT0024-001	Door, enclosure	1
23	DT0029-001	Button screw M4 x 8mm	4
24	028040-242	Lock washer M4	4
25	026040-136	Washer M4	4
26	DT0030-001	Reel support	1
27	018061-531	Screw M6 x 15mm	4
28	028060-242	Lock washer M6	4
29	DT0036-001	Reactor plate, Vertical ST9000	1

Head – External Parts 1



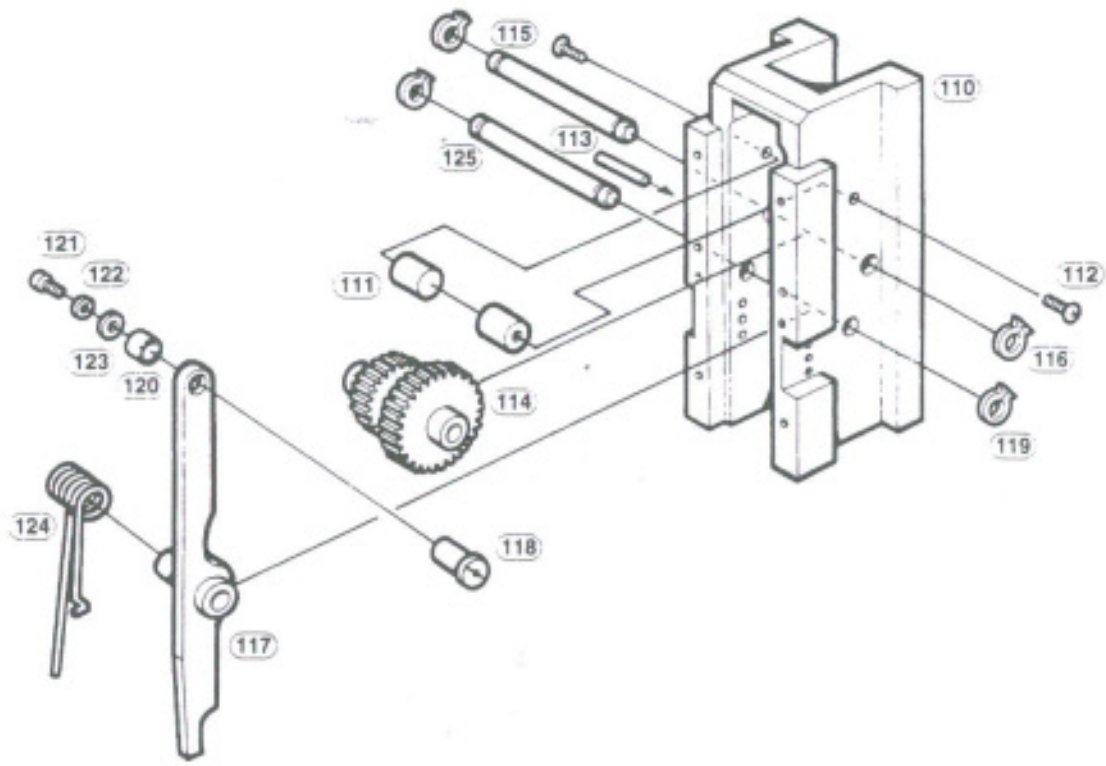
Key #	Part Number	Description	Qty.
30	DT0137-001	Feed collar	1
31	DT0138-001	Feed gear	1
32	DT0139-001	Feed shaft	1
33	DT0140-001	Key	1
34	DT0141-001	Clutch, ratchet	2
35	018303-031	Screw M3 x 30mm	2
36	026030-232	Washer M3	2
37	028030-242	Lock washer M3	2
38	048060-142	C-ring 6M	1
39	DT0143-001	Feed ratchet	1
40	DT0158-001	Screw M3 x 8mm	2
41	DT0144-001	Assembly, support plate right	1
42	018401-031	Screw M4 x 10mm	4
43	028040-242	Lock washer M4	4
44	DT0147-001	Assembly, support plate left	1
45	DT0149-001	Pawl spring	1
46	DT0150-001	Anti-back, ratchet	1
47	018300-631	Screw M3 x 6mm	1
48	028030-242	Lock washer M3	1
49	DT0151-001	Feed knob	1
50	DT0152-001	Feed spring	1
51	025060-232	Washer M6	1
52	DT0154-001	Feed lever	1
53	DT0155-001	Feed pawl	1
54	DT0156-001	Spacer M6	2
55	018401-231	Screw M4 x 12mm	2
56	028040-242	Lock washer M4	2
57	026040-136	Washer M4	2
58	DT0212-001	Feed stop	1
59	012502-531	Screw M5 x 25mm	1
60	021500-305	Nut M5	1
61	DT0229-001	Screw M4 x 20mm	2

Head – External Parts 2



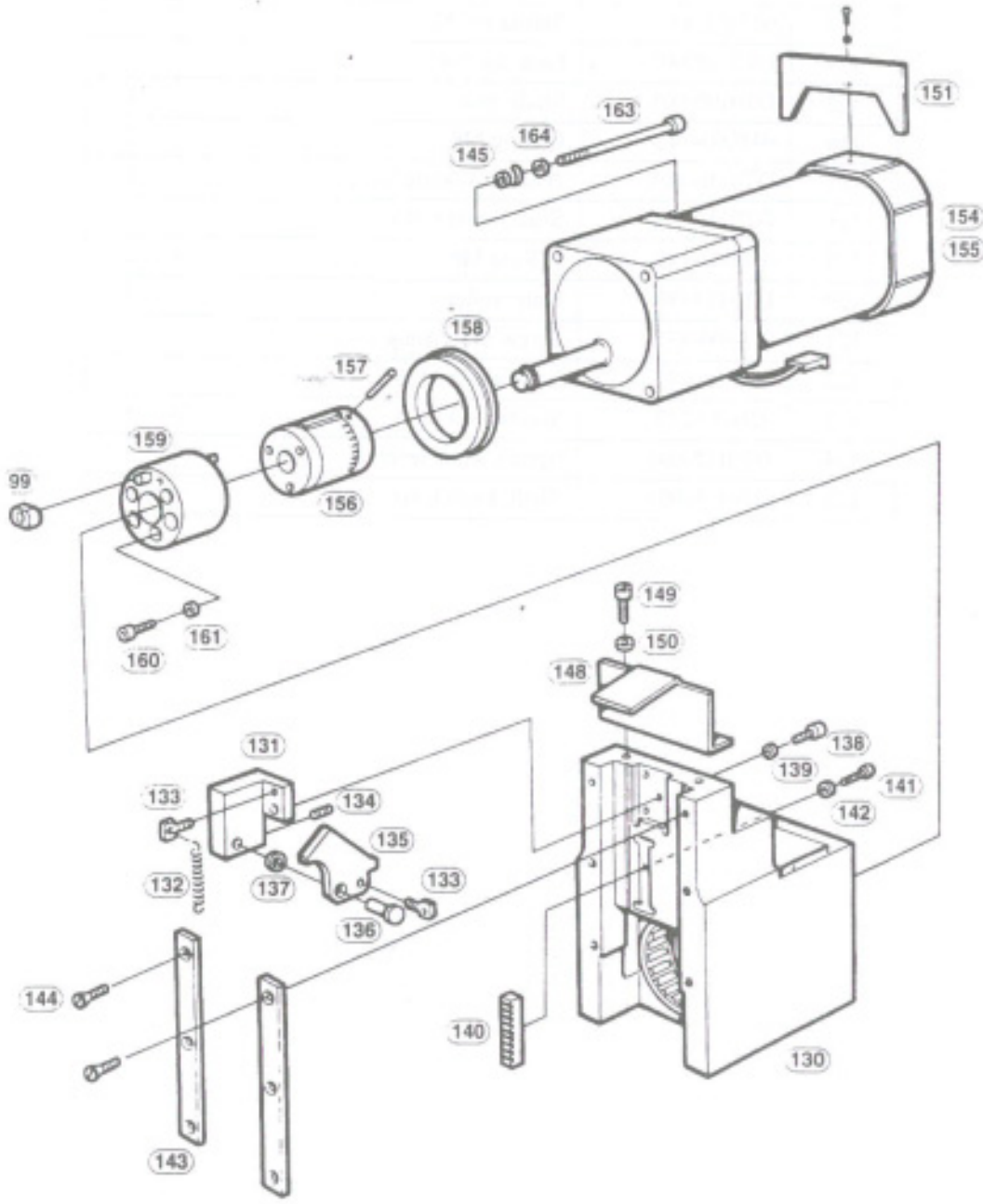
Key #	Part Number	Description	Qty.
70	DT0117-001	Block, needle holder	1
71	018401-031	Screw M4 x 10mm	4
72	028040-242	Lock washer M4	4
73	DT0118-001	Knife block	1
74	018400-831	Screw M4 x 8mm	2
75	028040-242	Lock washer M4	2
76	DT0119-001	Knife	1
77	DT0120-001	Assembly, needle holder	1
78	018401-531	Screw M4 x 15mm	2
79	028040-242	Lock washer M4	2
80	DT0122-001	Screw, needle lock	2
81	7-60-4508-01	Needle, Plastic Staple™ Fine Fabric™	2
82	DT0125-001	Ejector slide	1
83	7-60-2733-01	Ejector rod	2
84	DT0128-001	Ejector rod washer	1
85	DT0158-001	Screw M3 x 8mm	1
86	DT0129-001	Screw plate	2
87	DT0130-001	Upper feed guide	1
88	DT0159-001	Button screw M4 x 10mm	4
89	026040-136	Washer M4	4
90	028040-242	Lock washer M4	4
91	DT0131-001	Assembly, feed guide	1
92	DT0135-001	Guide plate	2
93	018300-631	Screw M3 x 6mm	2
94	028030-242	Lock washer M3	2
95	026030-232	Washer M3	2
96	018400-831	Screw M4 x 8mm	4
97	026040-136	Washer M4	4
98	028040-242	Lock washer M4	4
99	DT0224-001	Bushing, crank	1

Head – Internal Parts



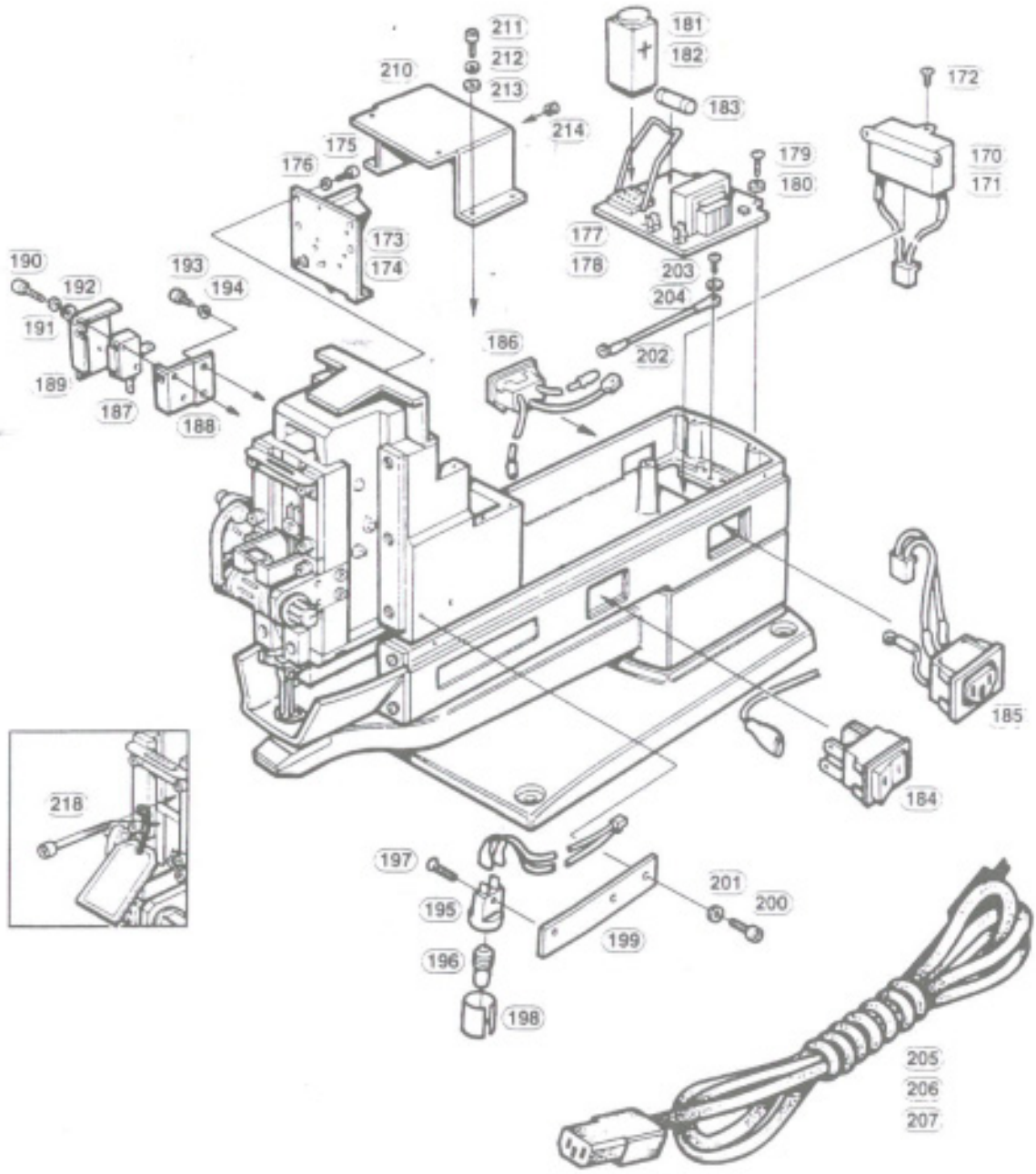
Key #	Part Number	Description	Qty.
110	DT0103-001	Housing	1
111	DT0106-001	Guide, knife lever	2
112	DT0226-001	Screw M4 x 8mm	2
113	047301-842	Spring pin M3	1
114	DT0108-001	Gear, ejector	1
115	DT0109-001	Shaft, gear	1
116	048060-142	C-Ring M6	2
117	DT0110-001	Assembly, knife lever	1
118	DT0112-001	Shaft, knife roller	1
119	048060-142	C-Ring M6	2
120	DT0113-001	Knife roller	1
121	018300-831	Screw M3 x 8mm	1
122	028030-242	Lock washer M3	1
123	026030-232	Washer M3	1
124	DT0115-001	Spring, knife lever	1
125	DT0116-001	Shaft, knife lever	1

Motor and Drive Train



Key #	Part Number	Description	Qty.
130	DT0202-001	Subassembly, mount	1
131	DT0206-001	Support, knife cam	1
132	DT0149-001	Pawl spring	1
133	150613-001	Spring post	2
134	012300-531	Screw M3 x 5mm	1
135	DT0207-001	Knife cam	1
136	DT0209-001	Shaft, knife cam	1
137	026040-136	Washer M4	1
138	018401-031	Screw M4 x 10mm	3
139	028040-242	Lock washer M4	3
140	DT0210-001	Rack, stationary	1
141	018300-831	Screw M3 x 10mm	1
142	028030-242	Lock washer M3	1
143	DT0211-001	Mount clamp	2
144	DT0226-001	Screw M4 x 8mm	6
145	225580-001	Steel tie #5	1
148	DT0231-001	Bracket, front safety	1
149	018300-831	Screw M3 x 8mm	2
150	028030-242	Lock washer M3	2
151	DT0232-001	Bracket, rear safety	1
154	DT0213-001	Assembly, motor 100/120V	1
155	DT0216-001	Assembly, motor 200/240V	1
156	DT0218-001	Clutch	1
157	047503-642	Spring pin 5x36	1
158	DT0219-001	Ring, motor support	1
159	DT0220-001	Assembly, crank arm	1
160	018501-231	Screw M5 x 12mm	3
161	028050-242	Lock washer M5	3
163	018068-531	Screw M6 x 85mm	4
164	028060-242	Lock washer M6	4

Electrical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Key #	Part Number	Description	Qty.
170	DT0234-001	Assembly, capacitor 100/120V	1
171	DT0235-001	Assembly, capacitor 200/240V	1
172	138853-001	Screw M4 x 8mm	1
173	DT0301-001	Assembly, solenoid 100/120V	1
174	DT0311-001	Assembly, solenoid 200/240V	1
175	018401-031	Screw M4 x 10mm	4
176	026040-136	Washer M4	4
177	DT0344-001	PC board 100/120V	1
178	DT0345-001	PC board 200/240V	1
179	138853-001	Screw M4 x 8mm	3
180	026040-136	Washer M4	3
181	DT0346-001	Timer 100/120V	1
182	DT0347-001	Timer 200/240V	1
183	DT0348-001	Fuse	1
184	DT0338-001	On/Off switch	1
185	DT0317-001	Assembly, Plug receptacle for power cord	1
186	DT0318-001	Assembly, Plug receptacle for foot switch	1
187	DT0320-001	Interlock switch	1
188	DT0321-001	Bracket, interlock switch	1
189	DT0340-001	Cover, interlock switch	1
190	002301-406	Screw M3 x 14mm	2
191	028030-242	Lock washer M3	2
192	026030-232	Washer M3	2
193	018400-831	Screw M4 x 8mm	2
194	028040-242	Lock washer M4	2
195	DT0322-001	Assembly, work area lamp	1
196	X50228-001	Lamp, work area	1
197	002261-405	Screw M26 x 14mm	1
198	DT0324-001	Lamp shade	1
199	DT0325-001	Lamp plate	1
200	018400-831	Screw M4 x 8mm	2
201	028040-242	Lock washer M4	2
202	DT0332-001	Ground wire, motor	1
203	060400-812	Screw M4 x 8mm	2
204	027040-226	Lock washer	2
205	7-60-4270-01	Power cord UL/CSA 200/240V	1
206	7-60-4270-02	Power cord IEC/EC 200/240V	1
207	7-60-4270-03	Power cord Japan 100/120V	1

Key #	Part Number	Description	Qty.
210	DT0225-001	Solenoid cover	1
211	018300-831	Screw M3 x 8mm	6
212	028030-242	Lock washer M3	6
213	026030-232	Washer M3	6
214	146315-009	Plug, rubber	1
215	DT0401-001	Shipping carton, Standard ST9000	1
216	DT0408-001	Shipping carton, Vertical ST9000	1
217	DT0406-001	Operator and Service Manual	1
218	DT0507-001	Screw, shipping restraint & tag	1

Index