MODEL SR-1000
HANDSAW RETOOTHER

OWNERS
MANUAL

WARNING

You must thoroughly read and understand this manual before operating the equipment, paying particular attention to the Warning & Safety instructions.

SAFETY INSTRUCTIONS

Safety Awareness Symbols are inserted into this manual to alert you to possible ***Safety Hazards***. Whenever you see these symbols, follow their instructions.

The ***Warning Symbol*** identifies special instructions or procedures which, if not correctly followed, could result in personal injury.

The ***Caution Symbol*** identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.

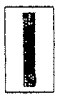
1. **KEEP GUARDS IN PLACE** and in working order.
2. **REMOVE WRENCHES AND OTHER TOOLS.**
3. **KEEP WORK AREA CLEAN.**
4. **DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use retoother in damp or wet locations, or expose it to rain. Keep work area well lighted.
5. **KEEP ALL VISITORS AWAY.** All visitors should keep a safe distance from work area.
6. **MAKE WORK AREA CHILD-PROOF** with padlocks or master switches.
7. **DON'T FORCE THE RETOOTHER.** It will do the job better and safer if used as specified in this manual.
8. **USE THE RIGHT TOOL.** Don't force the retoother or an attachment to do a job for which it was not designed.
9. **WEAR PROPER APPAREL.** Wear no loose clothing, gloves, neckties, or jewelry which may get caught in moving parts. Nonslip footwear is recommended. Wear protective hair covering to contain long hair.
10. **ALWAYS USE SAFETY GLASSES.**
11. **DO NOT OVERREACH.** Keep proper footing and balance at all times.
12. **MAINTAIN RETOOTHER WITH CARE.** Follow instructions in this manual for lubrication and preventive maintenance.
13. **DISCONNECT POWER BEFORE SERVICING.**
14. **REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure the switch if OFF before plugging in the retoother.
15. **CHECK DAMAGED PARTS.** A guard or other part that is damaged or will not perform its intended function, should be properly repaired or replaced.
16. **NEVER LEAVE RETOOTHER RUNNING UNATTENDED. TURN POWER OFF.** Do not leave retoother until it comes to a complete stop.
17. **KNOW YOUR EQUIPMENT.** Read this manual carefully. Learn its application and limitations as well as specified potential hazards.
18. **KEEP ALL SAFETY DECALS CLEAN AND LEGIBLE.** If safety decals become damaged or illegible for any reason, replace immediately. Refer to replacement parts illustrations in this manual for the proper location and part numbers of safety decals.
19. **DO NOT OPERATE THE GRINDER WHEN UNDER THE** influence of drugs, alcohol, or medication.

This machine is intended for retoothing hand saws ONLY. Any use other than this may cause personal injury and void the warranty.

To assure the quality and safety of your machine and to maintain the warranty, you MUST use original equipment, manufacturers replacement parts and have any repair work done by a qualified professional.

ALL operators of this equipment must be thoroughly trained BEFORE operating the equipment.

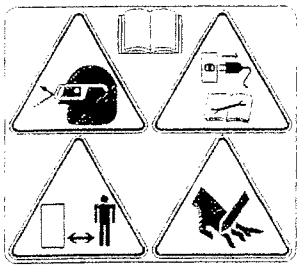
Do not use compressed air to clean dust from the machine.



Symbol for starting or running the machine. Flip the toggle switch to this side.

Symbol identifying a panel, cover, or area as having live electrical components within.

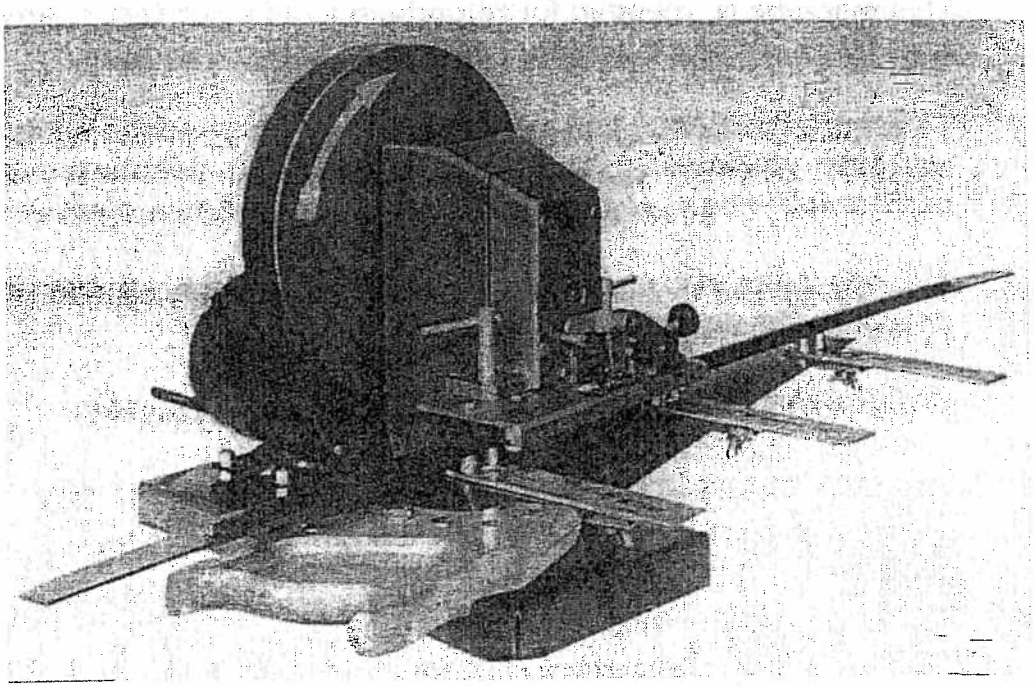
Symbol for emergency stopping the machine. Flip the rocker switch to this side.



Symbols for Read operators manual, wear safety glasses and disconnect power before servicing.

Symbols for sharp object which will cause serious injury and symbol for keep visitors a safe distance away from the machine.

Symbol for hearing protection required when operating this machine



INTRODUCTION

Trying to reclaim badly worn, unevenly spaced or broken tooth saws by filing methods can quickly eat up your saw file inventory. The Model SR-1000 Retoother completely replaced all old teeth with new, precisely-sized, accurately spaced teeth. No jointing is required. Cuts any tooth size from 4-points through 11 plus 13-point (standard). It will accomodate most saws without removing the handle from blade — eliminates costly, time consuming handle removal, increases retoothing speed and efficiency. The Automatic Retoother restores any handsaw to like-new condition easily in a matter of minutes and will be a welcome addition to your shop. After assembling your unit, please refer to the "Getting To Know Your Machine" section to familiarize yourself with your Automatic Retoother.

TABLE OF CONTENTS

DIA. NO.	PART NO.	DESCRIPTION
51	R000552	Kep Nut ¼-20 NC
52	3859027	Feed Pin
53	3859041	Gib Button Adjusting Screw
54	J191100	Hex Nut 10-32 NF
55	B252811	Socket Cap Screw ¼-20 NC x 1 3/4" Long
56	**3709086**	**Decal**
57	**3879300**	**Cam Lock**
58	**3709826**	**Vinyl Tip**
59	**J317000**	**Hex Locknut 5/16-18 NC**
60	**3859002**	**Front Cover**
61	3709010	Gib Button
62	3859042	Side Gib Adjusting Screw
63	3859136	Punch 54°
64	3249153	Washer
65	B250831	Socket Head Cap Screw ¼-28 NF x ½" Long
66	**3249145**	**Stripper Pin**
67	**3249144**	**Stripper Spring**
68	**3859040**	**Gib Plate**
69	**3859011**	**Tray**
70	**B161211**	**Socket Head Cap Screw 8-32 x 3/4" Long**
71	3249111	Dowel - Short
72	3859035	Punch Holder
73	3859028	Slide Block
74	3859025	Shaft
75	3709108	Retaining Ring
76	**3709107**	**Thrust Washer**
77	**3859522**	**Main Frame Assembly**
78	**3859003**	**Flywheel**
79	**3859039**	**Lift Plate**
80	**B110406**	**Socket Head Cap Screw 4-40 NC x ¼" Long**
81	H091222	Cotter Key
82	K190001	Plain Washer #10
83	R000822	Woodruff Key 5/16 x 1" Long
84	H181203	Spirol Pin
85	R602018	Drive Screw #4 x 3/16 Long (2) Required
86	**3707281**	**Cord Mount**
87	**K311501**	**5/16 Lockwasher**
88	**B190802**	**Slotted Round Head Screw 10-24 NC x ½" Long**
89	**B191004**	**Fillister Head Screw 10-24 x 5/8" Long**
90	**R000553**	**Kep Nut 10-24 NC**
91	J197100	10-24 Locknut
92	3708448	Decal - Warning Electrical
93	3708459	Decal - Emergency Stop
94	3708460	Decal - Start
95	3708524	Decal - Warning Safety
96	**3708528**	**Decal - Hearing Protection**

UNPACK CARTONS

Remove all items from the carton and check against the packing list for missing items. If any problems exist, refer to the Shipping & Receiving Instructions on page 4.

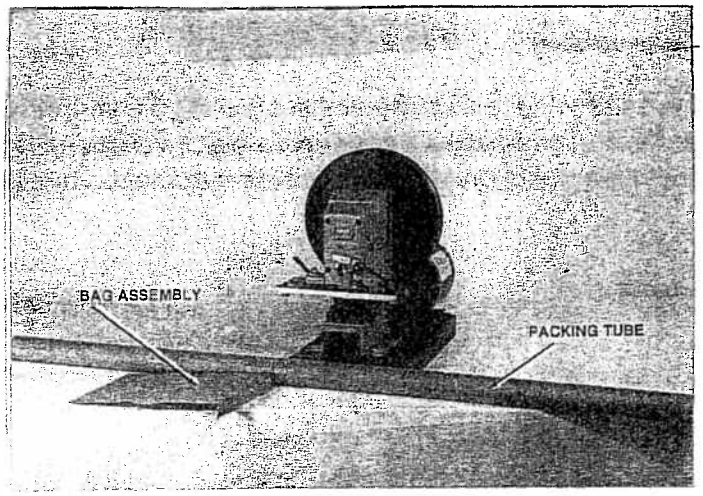
TOOLS NEEDED:

Allen Keys - 1/8", 3/16", 3/32", 5/32"
7/16" Wrench
1/2" Wrench

PACKING LIST

1 - Retoother (#385)
1 - Instruction Manual
Packing Tube with contains:
1 - 3589982 - Straight Saw Carrier which includes:
- 1 - 3589074 - Straight Carrier Bar
- 6 - 3589072 - Carrier Bar Spacer
- 3 - 3589073 - Carrier Bar Hanger
- 3 - 3589128 - Carrier Bar Bolt
- 3 - E251600 - Carriage Bolt
- 3 - 3879321 - Carrier Clamp
- 3 - 3879300 - Cam Lock
  - 3709826 - Vinyl Tip
  - R000380 - Locknut
- 1 - 3859507 - Ratchet Bar - 13-7-4 Points
- 1 - 3859508 - Ratchet Bar - 8-4½ Points
- 1 - 3859509 - Ratchet Bar - 9-5 Points
- 1 - 3859510 - Ratchet Bar - 10-5½ Points
- 1 - 3859511 - Ratchet Bar - 11-6 Points

Bag Assembly Which Includes:
- 1 - 3249149 - Retoother Gauge
- 1 - R000856 - Allen Key 1/8"
- 1 - R000857 - Allen Key 3/16"
- 1 - R000858 - Allen Key 3/32"
- 1 - R000859 - Allen Key 5/32"



MOUNT RETOOTHER TO BENCH

The retoother should be mounted on a suitable workbench or table 30 to 34-inches in height. The table or bench should be solid. In addition, a space of 48-inches on each side of the retoother must be available to permit carrier bars to be placed in and fed through the machine. Securely fasten the retoother to the bench with the lag screws supplied.

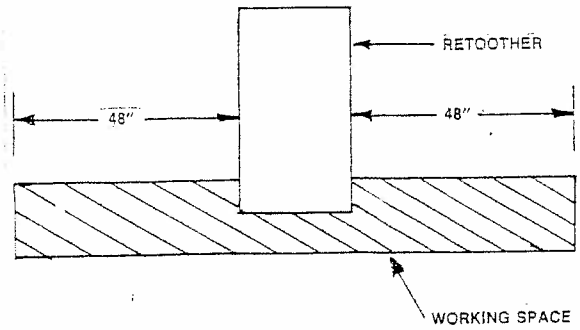


FIG. 1

ASSEMBLE CARRIER BAR ASSEMLBY

The next step is to assemble the straight carrier. Remove items from packing tube and sort them out on a table. Assemble using the diagram at the right as a guide.

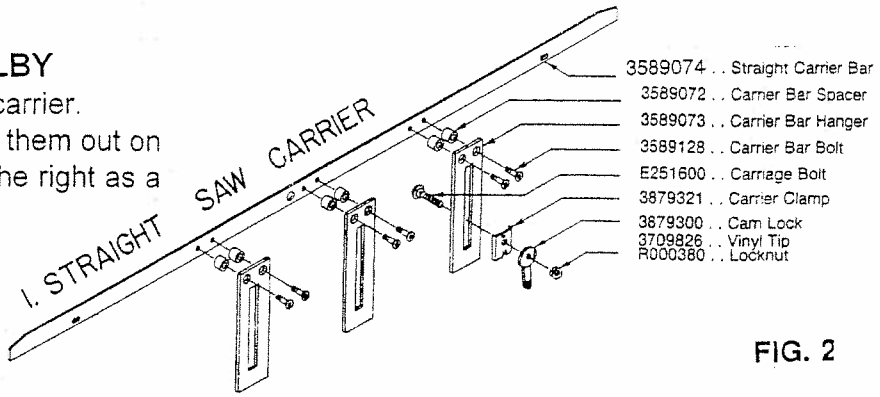


FIG. 2

IMPORTANT GROUNDING INSTRUCTIONS

In case of a malfunction or breakdown, grounding reduces the risk of electrical shock by providing a path of least resistance for electrical shock.

This Grinder has an electrical cord with an equipment grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded according to all local or other appropriate electrical codes and ordinances.

Before plugging in the Grinder, make sure it will be connected to a supply circuit protected by a properly-sized circuit breaker or fuse. 10 amp minimum for 115V application.

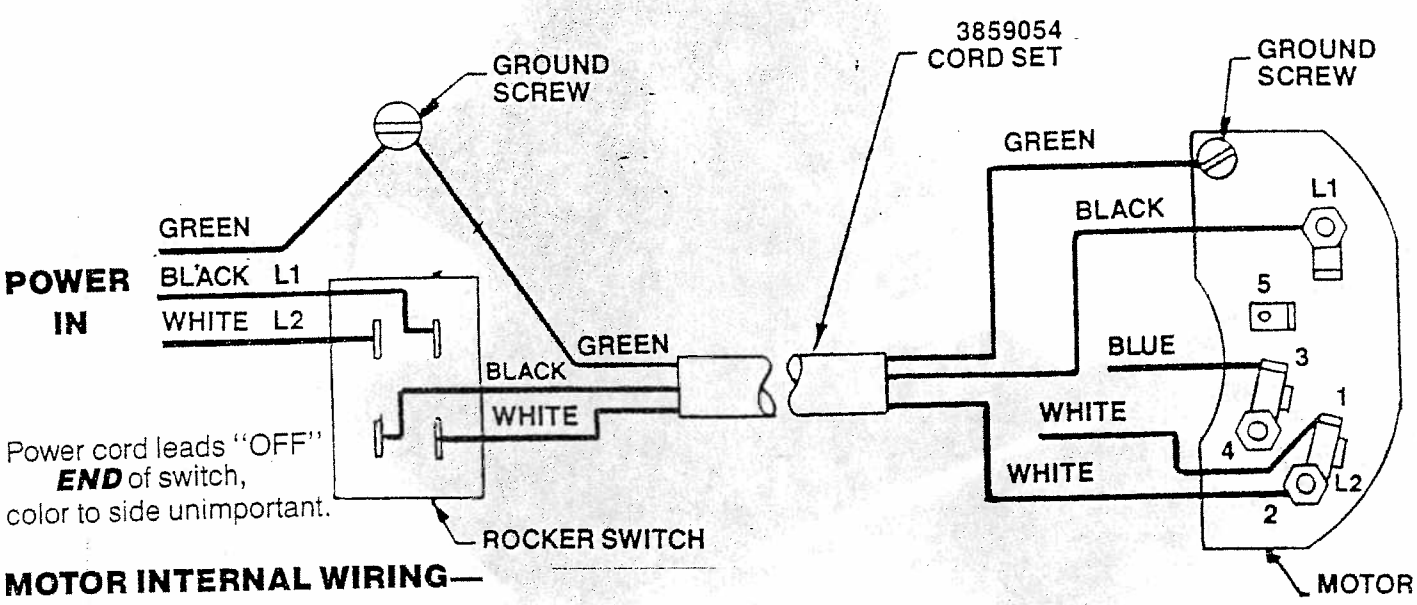
DO NOT MODIFY THE PLUG PROVIDED WITH THE MACHINE; IF IT WILL NOT FIT THE OUTLET, HAVE A PROPER OUTLET AND CIRCUIT INSTALLED BY A QUALIFIED ELECTRICIAN.

Always provide a proper electrical ground for your machine. An improper connection can cause a dangerous electrical shock. If you are unsure of the proper electrical grounding procedure, contact a qualified electrician.

115 Volt Model Only.
Plug the power cord into standard grounded receptacle as shown:

WIRING INSTRUCTIONS

AS BUILT 115 VOLT AC



MOTOR INTERNAL WIRING—

Motor leads "ON" ***END*** of switch, side unimportant.

ROTATION LEADS = BLACK TO TERMINAL 2
REFERENCE = RED TO TERMINAL 4

VOLTAGE LEADS = WHITE TO TERMINAL 1
As Built **115V** = BLUE TO TERMINAL 3

NOTE: Motor leads must go to "ON" ***END*** of switch and power cord leads to "OFF" ***END*** end of switch.

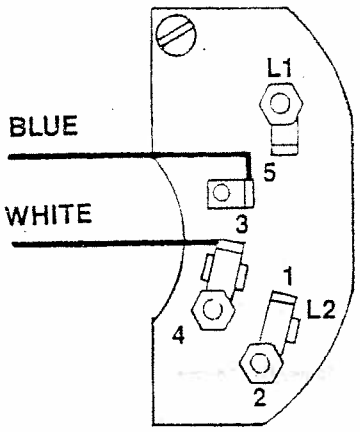
TO CONVERT TO 220 VOLT AC

To convert this unit to 220 Volt 1 Phase, cut the plug off of cord and replace it with the appropriate plug for your locality. For plug and circuit breaker sizing, see motor nameplate rating. Use only a qualified electrician. Rewire the unit as below:

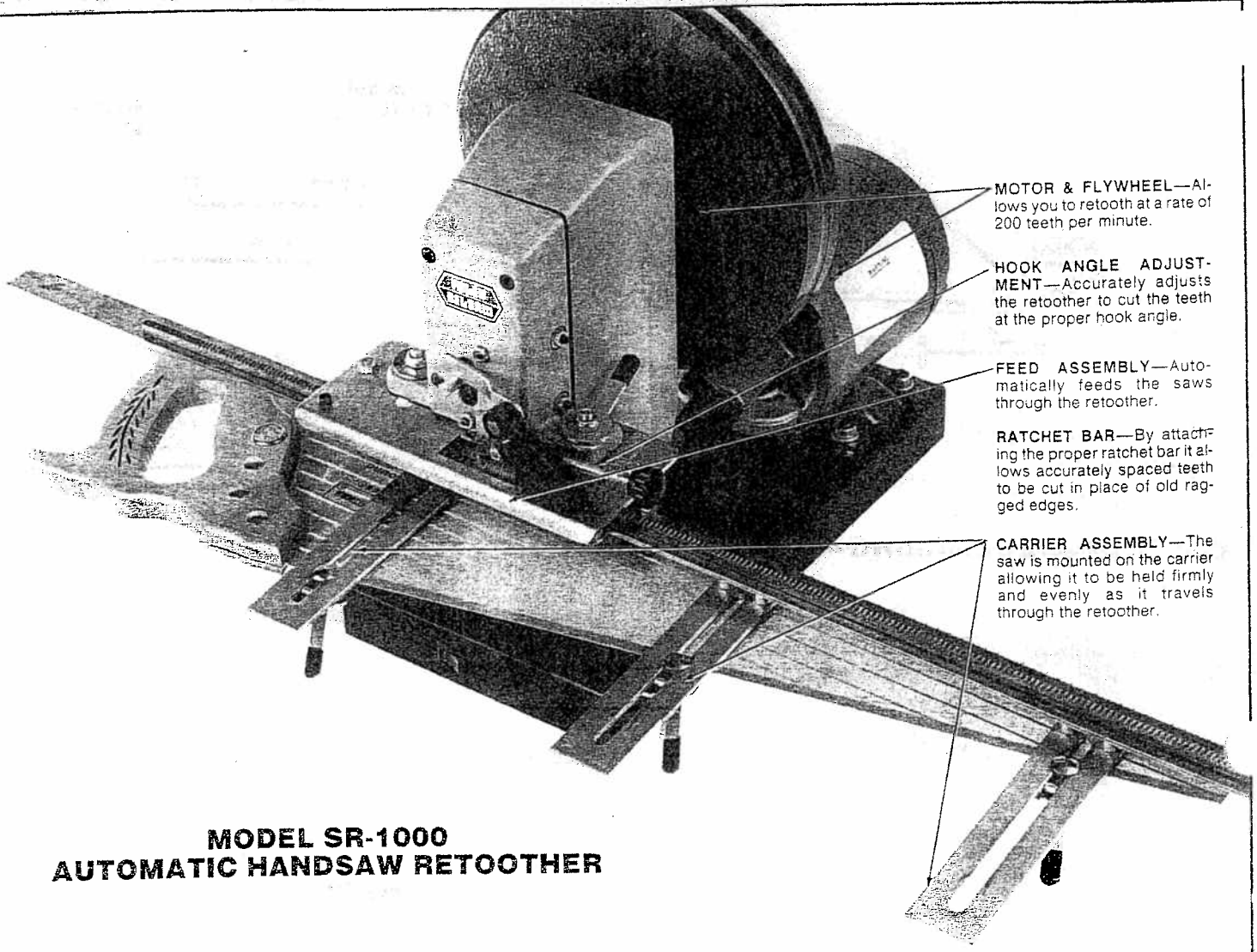
220 VOLT:

To convert the unit from 115 volt to 220 volt, the only change is to move Internal White Wire from Terminal 1 to Terminal 3 and Internal Blue Wire from Terminal 3 to Terminal 5.

NOTE: This motor will correctly operate on 60 Hz or 50 Hz.



GETTING TO KNOW YOUR MACHINE

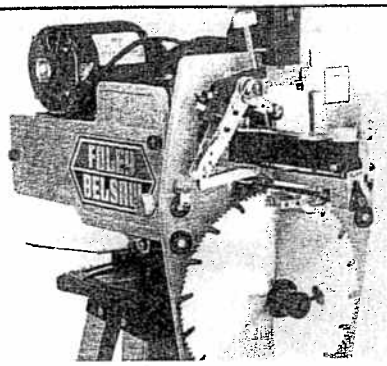


MODEL SR-1000
AUTOMATIC HANDSAW RETOOTHER

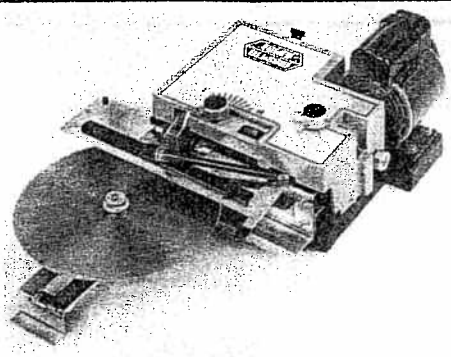
MACHINE SPECIFICATION

Teeth Per Minute	200
Maximum Sawblade Thickness	.060
Points Per Inch	4-15
Motor HP	1/2 HP, 115/220V, 60/50 Hz, 1 Phase
Motor RPM	1725
Bench Space	11" x 18"
Working Space	18" x 107"
Hook Angle Adjustment	0° to 30°
Sound Level	Greater than 75 Dba

SUPPLIES • ACCESSORIES • ATTACHMENTS



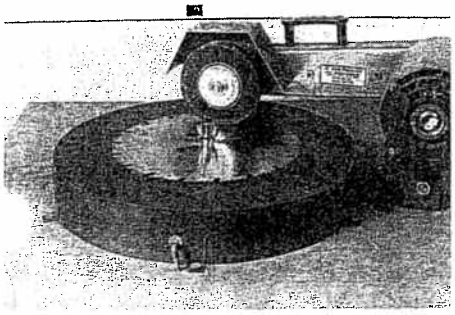
SF-1000 AUTOMATIC SAW FILER Amazing versatility! Sharpens combination circular saws; all crosscut circular saws with evenly spaced V-shaped teeth; band saws up to 4½" in width and up to 24' in length; carpenter's handsaws - both straight edged and crowned, either rip or crosscut including back and miter box; plus meat sawblades. New features in design and construction assure precision sharpening and longer life.



SS-1000 AUTOMATIC POWER SETTER Sets both sides of sawblades in one operation—at the rate of 240 teeth per minute! Sets rip and crosscut carpenter's handsaws, band saws - 4 to 16 points per inch. Provides correct kerf width to eliminate binding and chattering of saws.

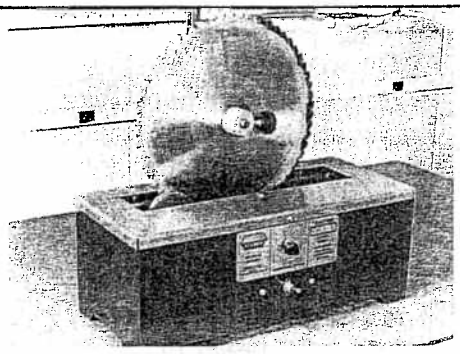
SNAP-ON FEED BARS-For Other Tooth Sizes (Optional) Special snap-on bars provide fast, easy set-up for tooth spacing for 12 through 16 points. Handles both crowned and straight retoothing.
No. 3859512-6-1/2 and 12 pts.
No. 3859514-7-1/2 and 14 pts.
No. 3859515-4-1/2, 8 and 15 pts.

STANDARD included for Model 385:
No. 3589982-Straight Saw Carrier
No. 3859507-Ratchet Bar 13-7-4 Points
No. 3859508-Ratchet Bar 8 - 4-1/2 Points
No. 3859509-Ratchet Bar 9-5 Points
No. 3859510-Ratchet Bar 10 - 5-1/2 Points
No. 3859511-Ratchet Bar 11-6 Points



MODEL 363-ECONO SAW BLADE POLISHER This compact version of the 378 Saw Polisher fits almost anywhere. Mounts on bench or table. Handles saws up to 18" in diameter. Tapered cone takes arbor holes 1/2" to 1" in diameter. Provides professional like-new polish to saws in seconds. Powerful 1/3 HP motor drives polisher buffer. Includes No. 3700445 Flap Wheel.

MAKE YOUR OWN CUSTOM SAWS - An extra service for any sharpening shop to satisfy the demands of the craftsman who desires a certain tooth style. These blank saws are ready for custom toothing, filing and setting. Make any tooth style, rip or crosscut in any spacing from 4 to 16 points per inch. (These saws will cost up to $10 and more if purchased with teeth.) Blank custom saws are sold in packages of four.
No. 3899504-Pkg. of 4 Extra Fine Quality (High Grade Steel) blades will maintain sharpness better and last longer.
No. 3899018-Saw Handles Pkg. of 6-Univers design to fit almost any hand saw. Slotted, but not drilled.
No. 3899023-Pkg. of 10 small handle screws. Aluminum.
No. 3899024-Pkg. of 10 large (Medallion) Handle screws. Aluminum.



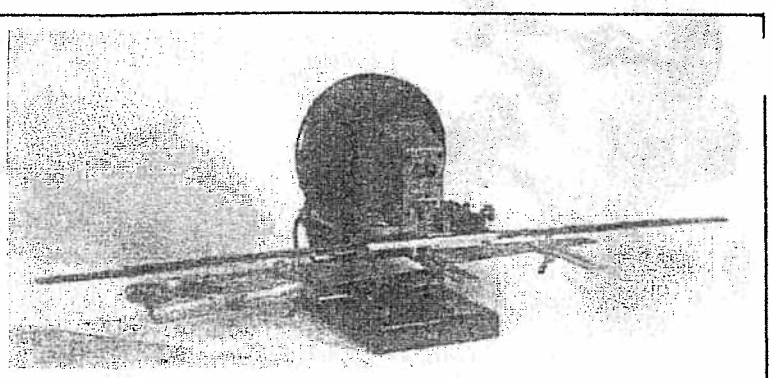
MODEL 361-ECONO-DIP After you've sharpened and cleaned the blade, protect the teeth. Prevent rusting and scuffing of newly sharpened tools and saw teeth and provide a tough, smooth plastic coating for any cutting edge. Our tank isolates the dipping pot and circulates air through perforated sides and backs to keep the tank covers cool and safe. Thermostat control, holds coating material at specific temperature.

GENERAL INFORMATION

SAW TERMINOLOGY

To operate the retoother we must understand the following terms:

1. Points Per Inch
2. Hook Angle
3. Two Basic Types of Handsaws



HOOK ANGLE

Hook angle is the measurement of the forward or backward lean of the face of the tooth. This will vary depending on the type of saw.

Ripsaw - 8° hook angle

Crosscut Saw - 15° hook angle

POINTS PER INCH

The standard industry measurement of sawblades is to measure points per inch, **NOT** teeth per inch. The diagram to the right shows the difference between the two measurements.

To arrive at the point size of a saw, you put a ruler on the teeth and count the number of tooth points there are in an inch. Notice that while an 8-point saw has 8 tooth points per inch, it actually has only 7 teeth to the inch. When referring to the measurement of sawblade it is called POINTS PER INCH.

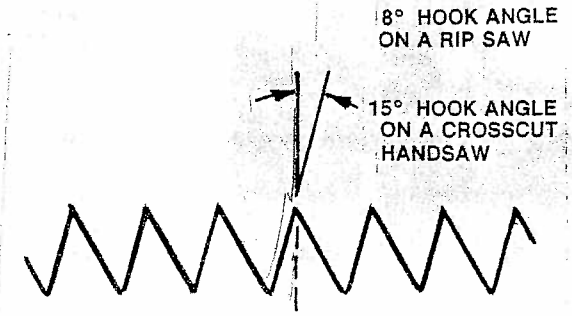


FIG. 4

TWO BASIC TYPES OF HANDSAWS

RIPSAW—

Used to cut with the grain of wood. Has 4-7 points per inch and a hook angle of -8°.

CROSSCUT SAW—

Used to cut across the grain of wood. Has 8-16 point per inch and a hook angle of -15°.

More information on these two types of saws is covered on the following pages.

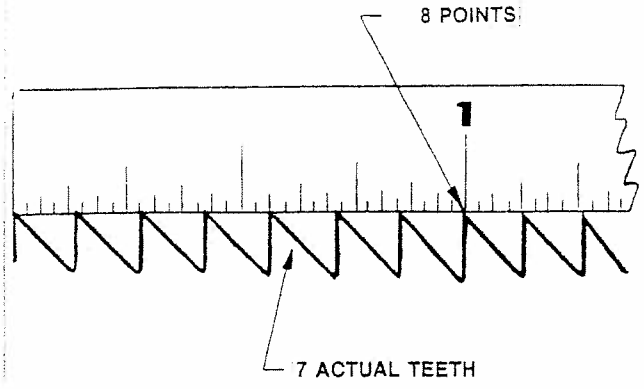
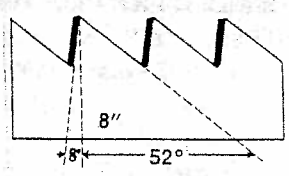


FIG. 5

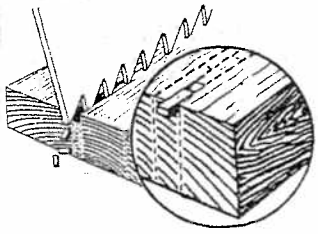
RIP SAWS

The rip saw is designed to cut with the grain and cuts on the push stroke. Its teeth cut like vertical chisels cutting out small pieces of wood. To enable the rip saw to cut in a chisel action, certain tooth angles are required. The face of the tooth is filed at an -8° hook angle while the back of the tooth is filed at a 52″ slope. The face of the tooth is filed straight across to complete the chisel type design of the tooth.

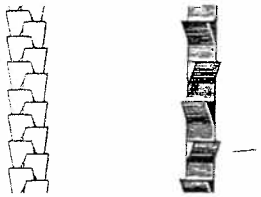
The retoother can be adjusted to automatically cut out each tooth with an 8″ HOOK ANGLE. For a saw to work properly the teeth must also cut a path wider than the thickness of the saw. This is accomplished by setting the teeth. Setting refers to bending each tooth slightly so that every other tooth is bent in opposite directions. This allows the teeth to cut a path that lets the saw move easily through the wood without binding. This top view of the rip saw also shows that the teeth are filed straight across.



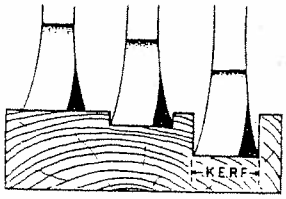
RIP HANDSAW
has a minus 8° Hook Angle



RIP TEETH
cut like miniature chisels
with the grain.



TOP VIEW
OF A RIP SAW



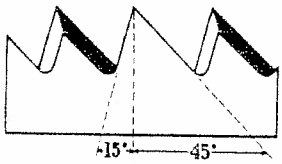
The set in a saw allows the teeth to cut a wider path (or kerf) through the material it is cutting. This prevents the saw from binding.

FIG. 6

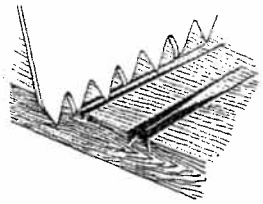
CROSSCUT SAWS

The crosscut saw is designed for cutting across the grain. Each tooth works as a small knife severing the wood fibers. The cutting edges or points of the teeth begin cutting two separate grooves until they form one solid cut or kerf to completely sever the wood.

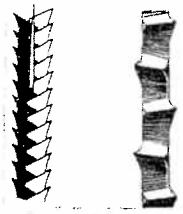
Just like the rip saw the crosscut saw requires specific tooth angles to accomplish this knifelike cutting action. The face of the crosscut tooth has a greater hook angle (-15°) than the face of a rip tooth, while the back of the crosscut tooth has only a 45° slope. These angles give the tooth a shearing action rather than a chisel action like the rip tooth. Another important angle that does not appear on the rip tooth is the bevel angle. Both the face and the back of the crosscut tooth are filed at 15° to give the tooth a sharp knifelike point that enables it to cut in a shearing action as the tooth was design. The retoother can be adjusted to automatically cut out each tooth with a -15° HOOK ANGLE. Like the rip saw the crosscut saw must also be set to prevent binding. One of the diagrams shows an enlarged view of a crosscut saw as it cuts through a piece of wood. Note how the knife points of the teeth first make two separate cuts before joining to sever the wood.



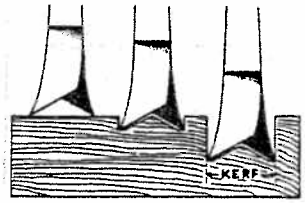
CROSSCUT HANDSAW
has a minus 15° Hook Angle



CROSSCUT TEETH
cut like sharp knife points
across the grain severing
the wood fibers.



TOP VIEW
OF A
CROSSCUT SAW



The set in a saw allows the teeth to cut a wider path (or kerf) through the material it is cutting. This prevents the saw from binding.

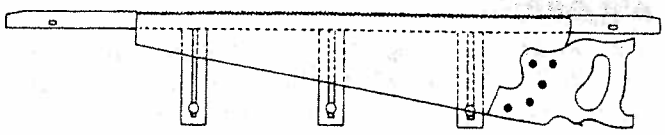
FIG. 7

GENERAL INFORMATION

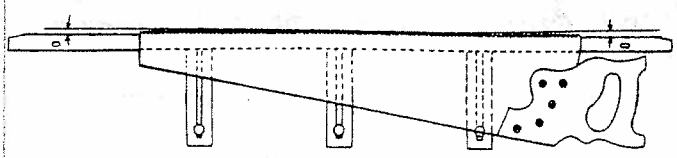
SELECTION OF HANDSAW CARRIERS

There are three types of carriers available:

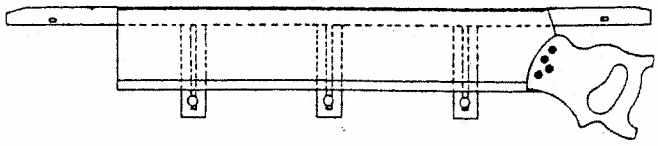
1. **Straight Carrier Bar**—Used on rip and crosscut handsaws. (Supplied as standard equipment with your retoother.)
2. **Crowned Carrier Bar**—Used on crowned saws (with a 3/16″ crown). This is an optional carrier - see Supplies & Accessories on page 9 for ordering information.
3. **Back or Miter Saw Carrier**—Used on miter and backsaws with the stiff ridge or back. This is an optional carrier - see Supplies & Accessories on page 9 for ordering information.



STRAIGHT CARRIER



CROWN CARRIER



MITER SAW CARRIER

FIG.

SELECTION OF RATCHET BARS

Handsaws can have from 4-15 points per inch. There are nine ratchet bars that snap onto the carrier. These bars determine the points per inch that the retoother will cut.

NOTE: The snap-on ratchet bars are stamped at one end to how the tooth spacings that the bar provides. Sizes run as shown: the first five bars being standard equipment and the last four being optional equipment available at extra cost. (See Supplies & Accessories on page 9 for ordering information.)

No. 3859507 BAR Stamped 13-7-4 provides tooth spacings of 13 points per inch when the feed pawl is adjusted to engage in every notch on bar; it provides tooth spacing of 7 points per inch when the pawl is adjusted to engage in every second notch; it provides tooth spacing of 4 points per inch when the pawl is adjusted to engage in every fourth notch. This adjustment is discussed in a later section.

No. 3859508 BAR Stamped 8-4½ provides the two tooth spacings of 8 and 4½ points per inch.

No. 3859509 BAR Stamped 9-5 provides the two tooth spacings of 9 and 5 points per inch.

No. 3859510 BAR Stamped 10-5½ provides the two tooth spacings of 10 and 5½ points per inch.

No. 3859511 BAR Stamped 11-6 provides the two tooth spacings of 11 and 6 points per inch.

No. 3859512 BAR Stamped 12-6½ provides the two tooth spacings of 12 and 6½ points per inch. **(Optional)**

No. 3859514 BAR Stamped 14-7½ provides the two tooth spacings of 14 and 7½ points per inch. **(Optional)**

No. 3859515 BAR Stamped 15-8-4½ provides the three tooth spacings of 15, 8, and 4½ points per inch. **(Optional)**

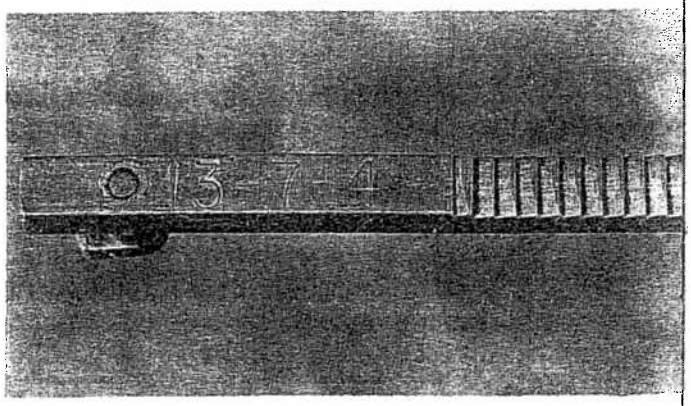


FIG. 9

OPERATING INSTRUCTIONS: RETOOTHING A HANDSAW

SELECT RATCHET BAR

Select the ratchet bar with the number of points you wish to cut into your sawblade. (Check selection of ratchet bars page 12 for explanation of ratchet bar stampings.)

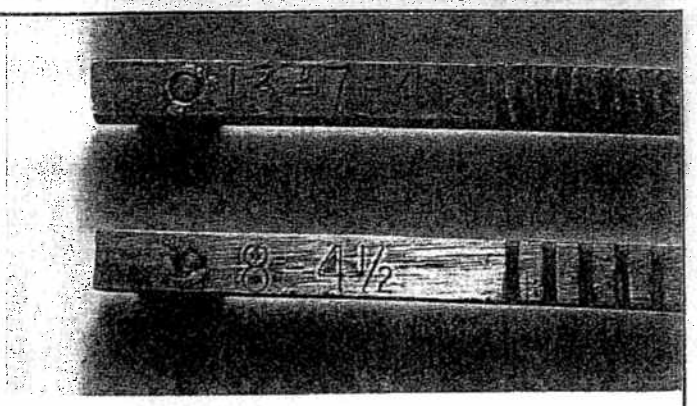


FIG. 10

MOUNT RATCHET BAR TO CARRIER

Attach the snap-on ratchet bar to your carrier. In attaching the ratchet bar to the hand carrier, the end bearing size marking must always be to the left. The center pin on the ratchet bar is off-centered. If you are assembling the ratchet bar in an incorrect manner, the center pin will not line up with the center hole on the carrier bar.

To attach the ratchet, grasp the ratchet bar at each end. Place on top of the carrier bar. Slip both ends of the ratchet bar into the end slots of the carrier. Slide the ratchet bar in direction of size markings on bar until prongs engage and hold ratchet bar securely in place. The center peg of the ratchet bar will then drop easily into the center hole of the carrier bar.

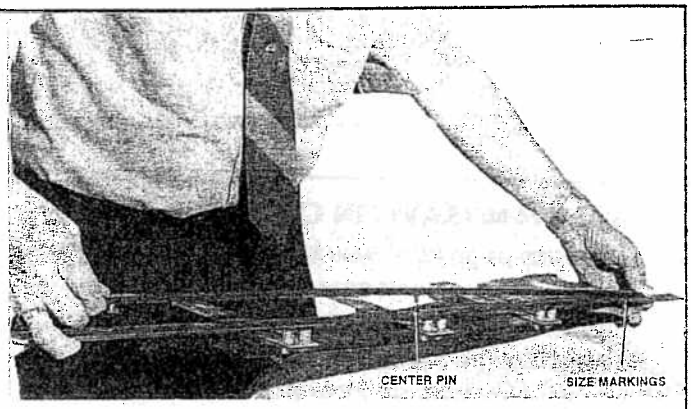


FIG. 11

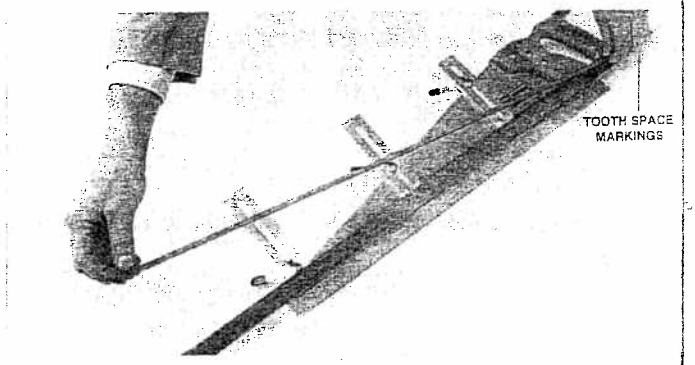


FIG. 12

MOUNT THE CARRIER ONTO RETOOTHER

The next step is to mount the carrier and ratchet bar onto the machine. Flip the feed pawl up and out of the way so that it will not engage in the notches of the ratchet bar.

Make sure the punch is at its highest point and slip the carrier into the guides that are located on the under side of the front of the retoother. Always insert carrier from left hand side. Slide carrier back and forth manually once it is mounted to make sure that it moves freely.

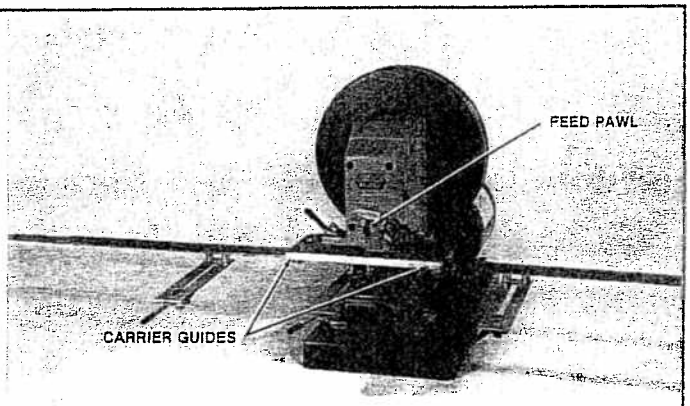


FIG. 13

OPERATING INSTRUCTIONS

MOUNT HANDSAW ONTO CARRIER

Center carrier in the retoother and loosely mount the handsaw onto the carrier clamps.

NOTE: Be sure the handle is positioned to the operator's left.

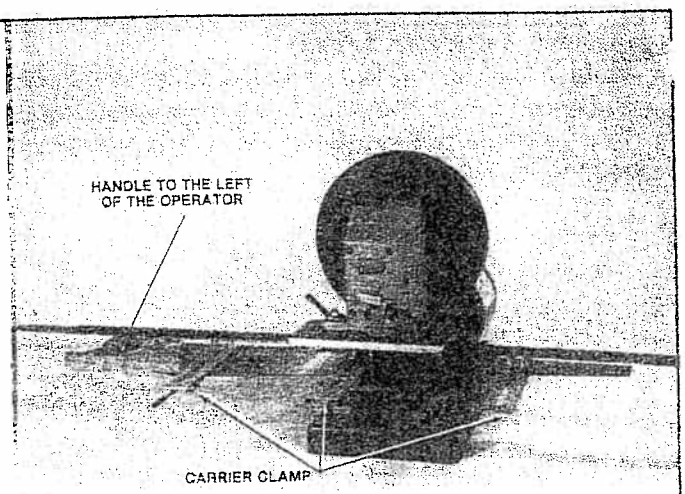


FIG. 14

ALIGN HANDSAW ON CARRIER

To properly align your saw in the carrier we will use as an example an 8-point saw. Line the gauge on the left hand side of the carrier. Adjust saw on this end until this end until the 8-point line is 1/16" below the bottom of an existing gullet on the saw. Finger tighten the left carrier clamp.

Align the right end of the saw in the same manner. With the 8-point line 1/16" below the bottom of an existing gullet on the right hand edge of the saw. Finger tighten the right carrier clamp.

Repeat both procedures on the left and right hand ends of the saw until it is correct. At this time, tighten all three of the carrier clamps so that the saw is firmly mounted into the carrier and cannot move when being retoothed.

NOTE: For 6-point saws, line up the tooth gullet 1/16" below the 6-point line. For a 7-point saw, line up the tooth gullet 1/16" below a pont on the gauge halfway between 6 and 8 on the gauge, etc... etc...

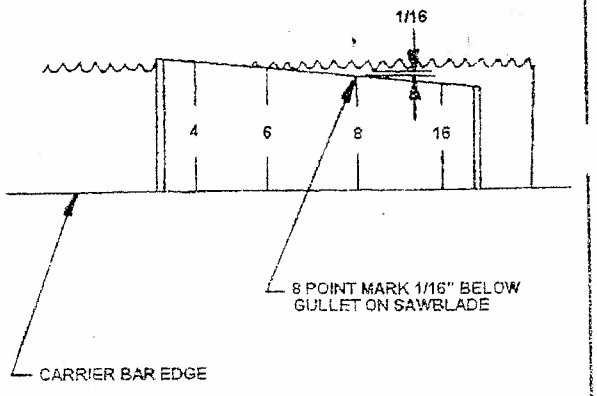


FIG. 15

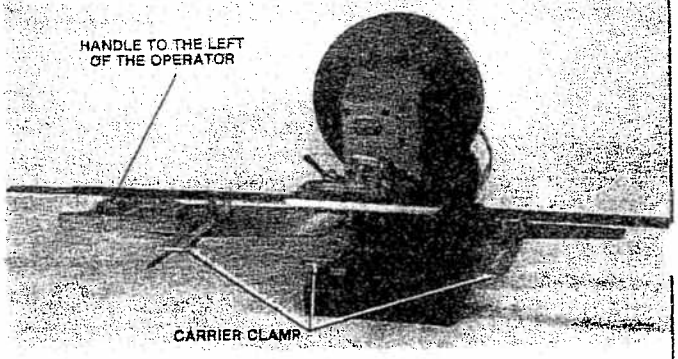


FIG. 16

ADJUST FEED PAWL

Adjust the feed pawl so that it will feed the ratchet bar properly. The feed pawl adjusting screw regulates the length of the feed pawl stroke. It can be screwed in or out as needed, so that the feed pawl engages every notch of the ratchet bar.

NOTE: The retoother feeds forward to the same point each time. The feed is adjusted by how far the feed pawl draws back.

For example, to cut a 8-point saw you would note that the ratchet bar is stamped 8-4½ on the left hand end of the ratchet bar.

If you adjust the feed pawl to feed every notch you will be cutting an 8-point saw, or the first number that is stamped on the bar. If you adjusted the feed pawl to go every other notch, you would be feeding at a rate of 4½ points per inch, or the second number on the bar.

Several of the bars have three numbers stamped on the left hand end of the ratchet bar. If you adjusted the feed pawl to feed 4 notches at a time you would be adjusting for the third number that is stamped on the left hand end of the bar.

In the following example, we will set the feed pawl for an 8-point saw.

Pull the saw carrier all the way to the right until the saw has cleared the punch and die area by 1 to 2-inches.

Flip the feed pawl down to engage a notch on the ratchet bar.

Manually hand crank the flywheel and watch the feed pawl's progress. It should push one notch forward, then back up and drop into the next notch and go half way up the next notch before reversing direction and starting to push the next notch forward. Adjust the feed pawl adjusting screw at this time until the feed pawl will travel as just mentioned.

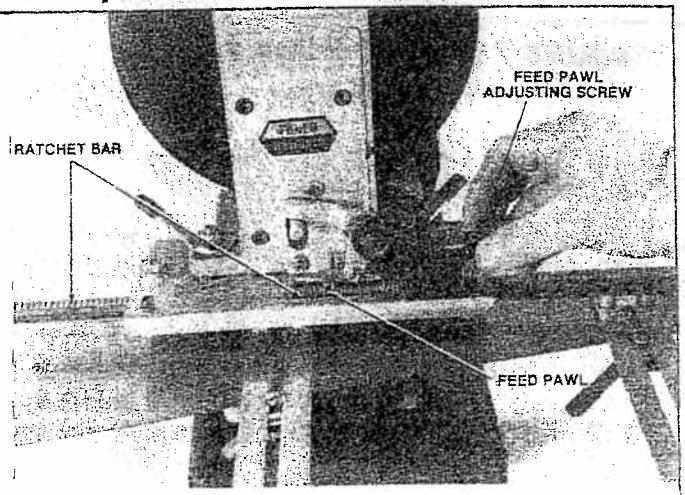
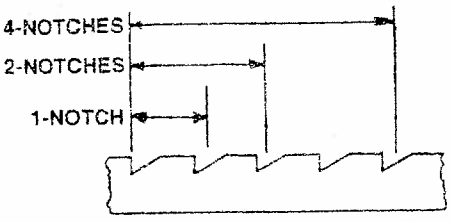


FIG. 17



SIDE VIEW OF RATCHET BAR

FIG. 18

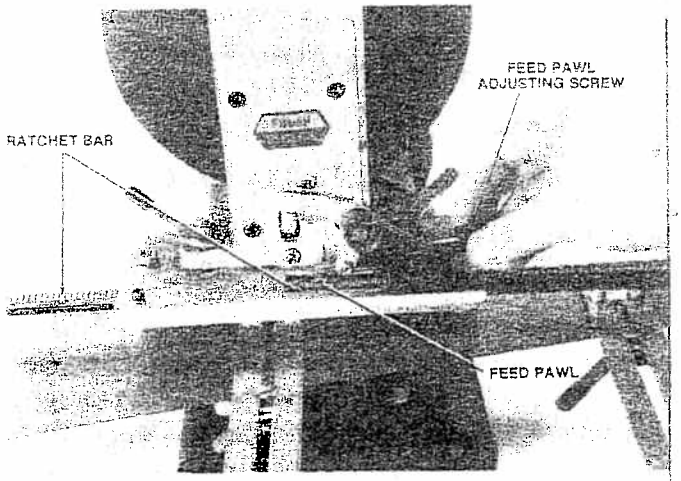
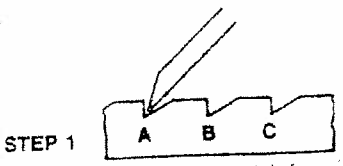
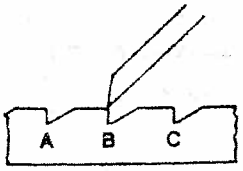


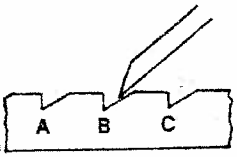
FIG. 19



STEP 1
Feed pawl pushes one notch forward.



STEP 2
Then feed pawl backs up into next notch.



STEP 3
Goes half-way up notch before reversing direction and pushing this notch forward.

FIG. 20

OPERATING INSTRUCTIONS

ADJUST TABLE TO HOOK ANGLE

The hook angle of the saw must be adjusted at this time.

If you have a Ripsaw (4 to 7-points per inch), adjust the hook angle scale to read 8°.

If you have a Crosscut Saw (8 to 16-points per inch) adjust the hook angle scale to read 15°.

This adjustment is completed by loosening the table locking handles and adjusting to the proper hook angle by moving the entire table back and forth until the reading is correct, and then locking the table locking handles so that the table cannot move during retoothing.

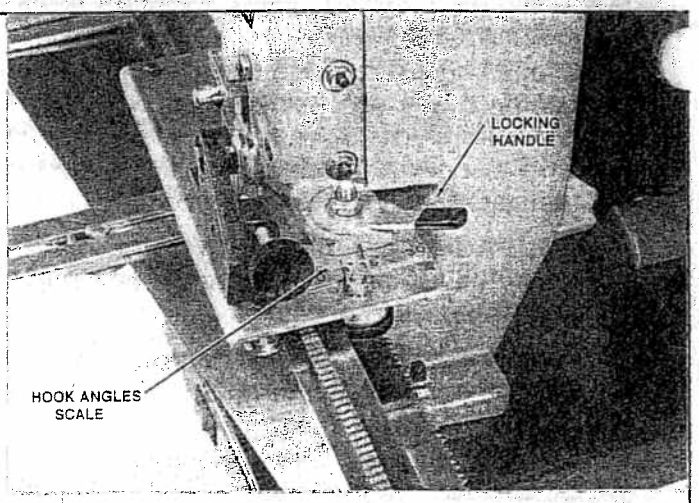


FIG. 21

DO NOT MAKE ADJUSTMENTS IF MOTOR IS RUNNING

RETOOTH HANDSAW

MAKE CERTAIN ALL GUARDS ARE IN PLACE.

The saw is now ready to b retoothed. Turn on the switch - sit back - relax - and the rest will be taken care of automatically by the machine.
If the teeth are not retoothed perfectly, refer to Troubleshooting on page 18.

CHIP DRAWER - Steel chips are formed as old teeth are removed and new teeth are punched into sawblades. At front of retoother, a drawer which extends underneath the punch and die is provided to catch these steel particles. The drawer should be emptied periodically, so no accumulation will clog the "V" slot of die.

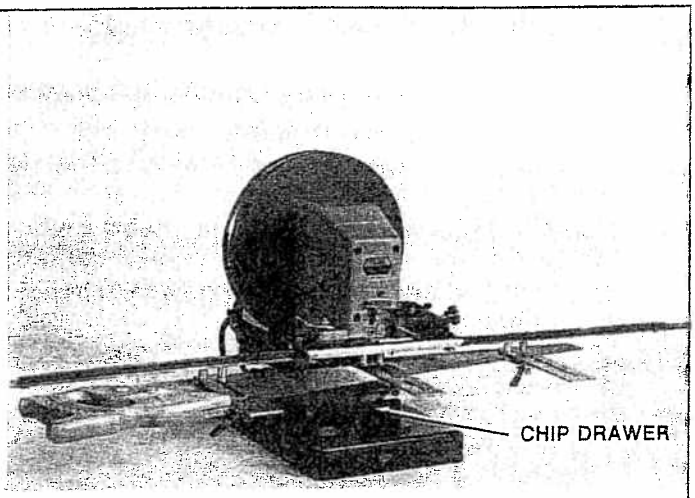
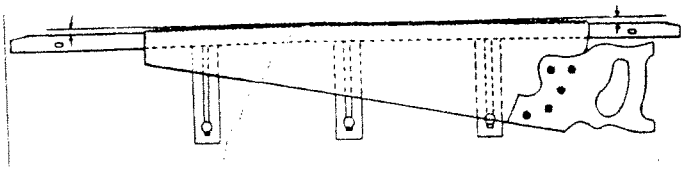


FIG. 22

RETOOTHING CROWN SAWS

To retooth a crown saw, follow the standard operating procedures except one must use a crowned carrier.

NOTE: There are two kinds of crown saws: 3/16″ Standard Crown Saws, 15/32″ Sandvik Crown Saws. We have carriers for both types of crown saws available. (See page 12 for more information.)

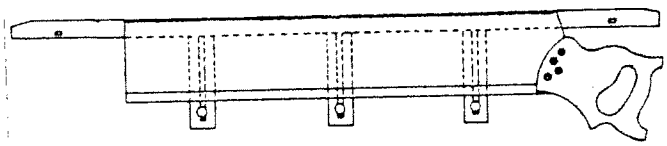


CROWN CARRIER

FIG. 23

RETOOTHING BACK OR MITER SAWS

To retooth a miter box saw, follow the standard operating procedures except one must use a back or miter saw carrier. (This carrier may be ordered from FOLEY-BELSAW or use the miter saw carrier from your Model SF-1000 Saw Filer.)



MITER SAW CARRIER

FIG. 24

RETOOTHING BADLY HOLLOWED HAND-SAWS

Occasionally a saw will be so badly hollowed in the center that the two retoothing passes are necessary. In the base of a badly hollowed saw, use retoother gauge near ends of sawblade when positioning saw on straight carrier. Take one cut through retoother to remove high areas on each end of the row of teeth. Then reposition saw on carrier and take a second retoothing cut the entire length of blade. This guards against punch having to take too deep a "bite". The punch will cut a maximum of a ½″ depth.

Whenever necessary, take a preliminary retoothing cut of not more than ¼″ on high spots, then reposition saw on carrier and take finishing retoothing cut the entire length of blade.

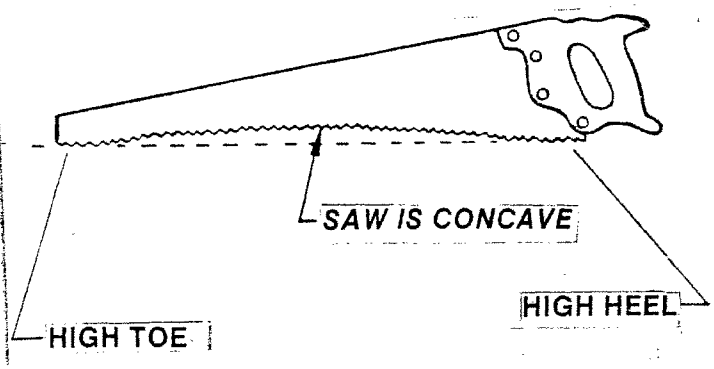
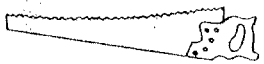


FIG. 25

PROBLEM	CAUSE	REMEDY
Retoother cuts several large teeth then back to regular teeth that it was cutting before. 	Feed pawl not adjusted properly.	(See Operating Instructions in Manual.) Back down feed pawl at beginning of stroke so it will only come up half of the distance into the next ratchet at end of the stroke. (Page 15)
Feed pawl won't stay down in contact with ratchet bar. 	Loose feed pawl spring. Binding taking place somewhere in feed pawl assembly.	Check tension of spring—replace if not adequate. Disassemble feed pawl assembly and clean area, oil lightly and reassemble so that feed pawl is snuggly held in holder but not binding.
Incorrect Hook Angle.	Hook pointer not lined up on correct angle.	Realign following operating instruction in manual. (Page 16-Top Box)
Row of Teeth Cut Concave Instead of Straight 	Carrier rollers not tight enough angainst carrier.	Realign and tighten carrier rollers. (Page 19-Middle Box)
Ragged Teeth 	Carrier rollers crooked.	Realign and tighten carrier springs. (Page 19-Middle Box)
Half Moon on Top of Teeth 	When setting up saw in carrier the gauge was not set deep enough. The half moon you see are the bottoms of old gullets.	Re-gauge saw using alignment instructions in manual. (Page 14)
Ragged Gullets 	Dull punch.	Sharpen punch following instructions in Maintenance Section (Pages 20-21-22)
Punch Stalls - Won't Cut Saw - But Motor Still Running	Friction wheel slipping on flywheel.	Adjust friction wheel using adjustment instructions. (Page 19-Bottom Box)

ADJUSTMENTS

LUBRICATION OF THE RETOOTHER

Lubricate the retoother each 8-hours of operation by placing a S.A.E. grade 30 motor oil at the following locations.

A. Oil hole on top of main frame.
B. Main shaft between flywheel and main frame casting.
C. Feed lever pivot pins.
D. Feed pawl pivot pins. Remove excess oil with cloth or cotton.

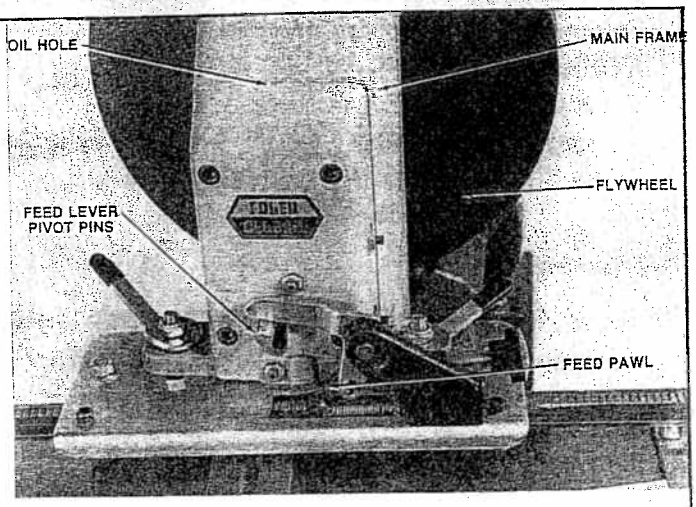


FIG. 26

CARRIER GUIDE ROLLER ADJUSTMENT

DISCONNECT POWER BEFORE MAKING ANY REPAIRS OR ADJUSTMENTS.

The carrier should slide through the guide rollers easily but yet hold the carrier firmly enough to prevent any side movement.
If your carrier is too loose in the guide rollers, loosen the bolt and nut holding the guide rollers and rotate the rollers against the carrier and re-tighten the nut and bolt (the guide rollers are eccentric).

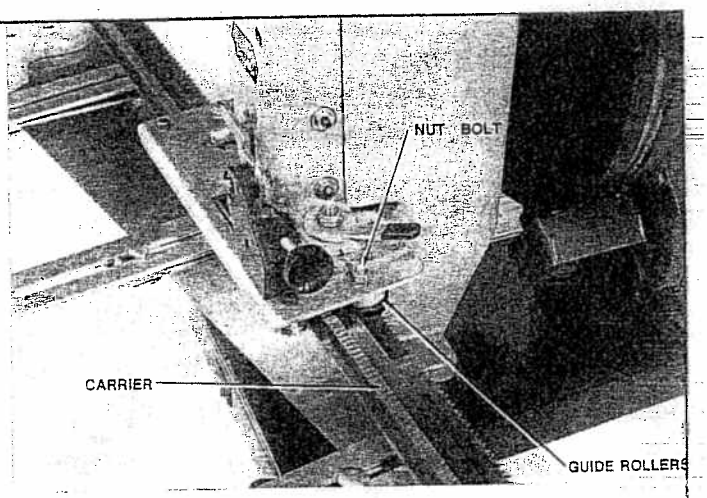


FIG. 27

ADJUSTMENT OF FRICTION DRIVE WHEEL

DISCONNECT POWER BEFORE MAKING ANY REPAIRS OR ADJUSTMENTS.

Loosen the four motor mounting nuts and slide the motor to the left, to a point at which the friction wheel just touches the flywheel.

* Move the motor an additional 1/16 to 3/32-inch to the left and tighten the motor mounting nuts. It is important that sufficient pressure be maintained between flywheel and friction wheel to avoid slippage.
* Overtightening of the friction wheel will result in excess wear of the motor bearings and friction wheel.

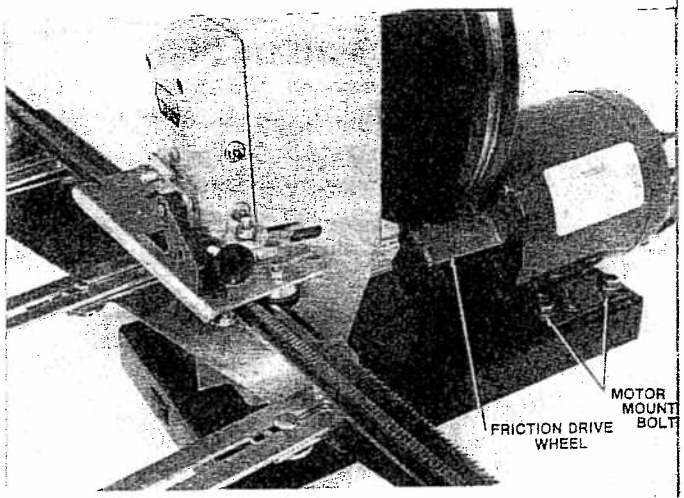


FIG. 28

ADJUSTMENT: SHARPENING PUNCH & DIE

REMOVE DIE

DISCONNECT POWER BEFORE MAKING ANY REPAIRS OR ADJUSTMENTS.

Loosen two cap screws and remove from base of retoother. Loosen recessed cap screw in front of die holder and remove die.

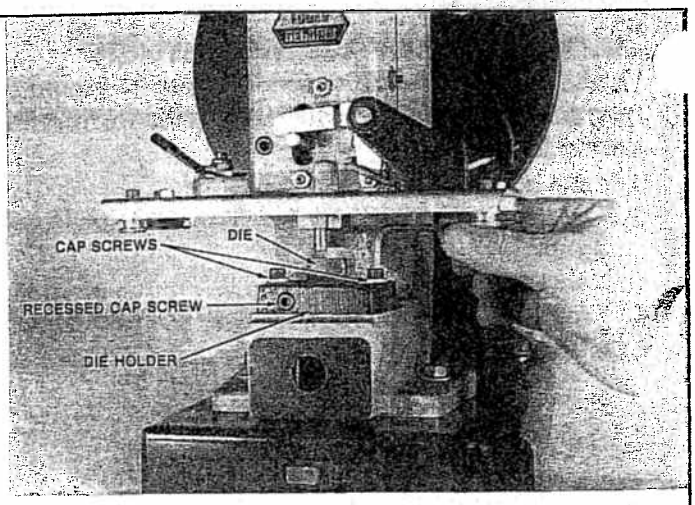
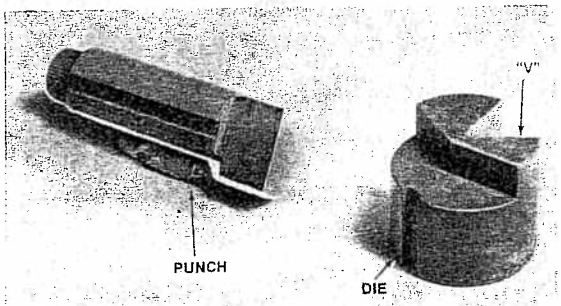


FIG. 29

SHARPEN DIE

Sharpening of the die is best done on a surface grinder by removing .005 to .015 material from top of die.

NOTE: Never grind in the "V" of the die. Lightly hone cutting edges to remove any burr build-up.



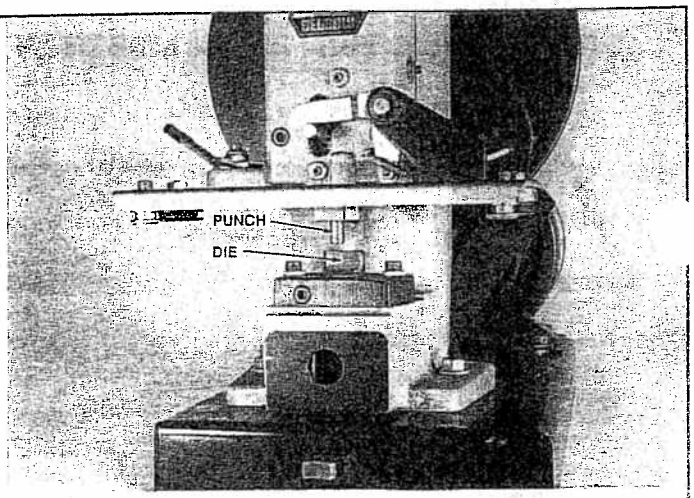


FIG. 30

REMOUNT DIE INTO HOLDER

After sharpening the die, check overall height by placing the die in the holder on a flat surface. The die should be maintained at a height of 1-5/32" by placing shims necessary under the die.

Set the die and holder aside. Installation of the die and holder will take place after you have sharpened the punch.

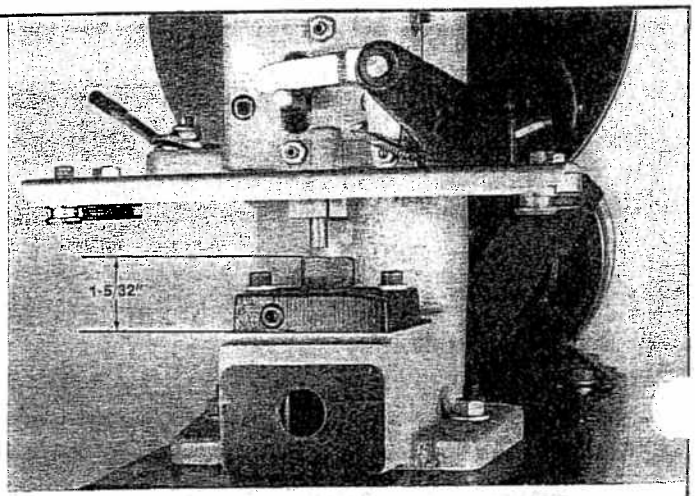


FIG. 31

SHARPENING PUNCH & DIE (continued . . .)

REMOVE PUNCH

DISCONNECT POWER BEFORE MAKING ANY REPAIRS OR ADJUSTMENTS.

Remove die holder casting from base
Turn flywheel by hand until punch is at the bottom of stroke.
Loosen recessed cap screw located on the left hand side of punch holder. (Do not remove cap screw - just loosen.)
Slide punch down until clear of punch holder for removal.
NOTE: You might have to use a screwdriver as leverage to help remove the punch from the punch holder.

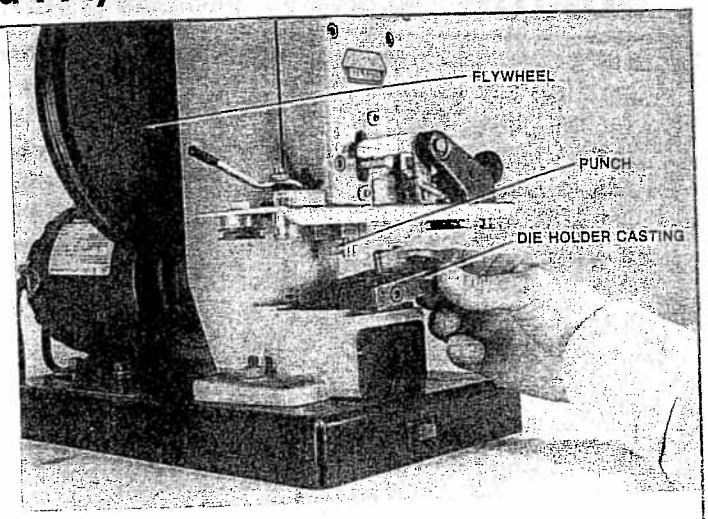


FIG. 32

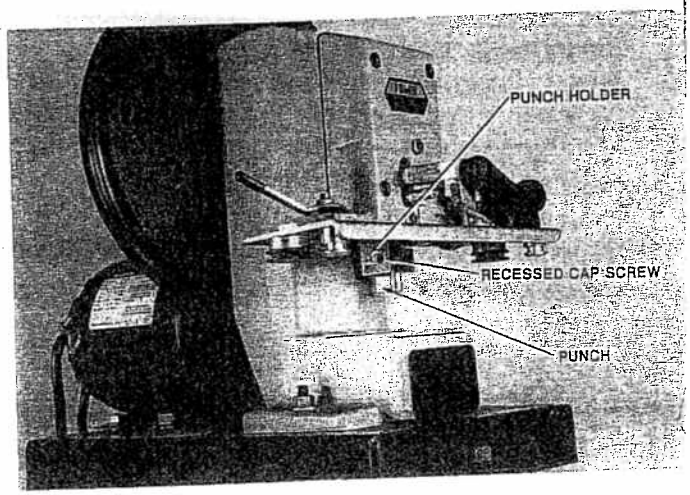


FIG. 33

SHARPEN PUNCH

Sharpening of the punch is best done on a tool grinder by grinding .005 to .020 from end of the punch. Note, shear angle on end of punch should be maintained. Lightly hone cutting edges to remove any burr build- up.

Refer to next page for installation of sharpened punch and die.

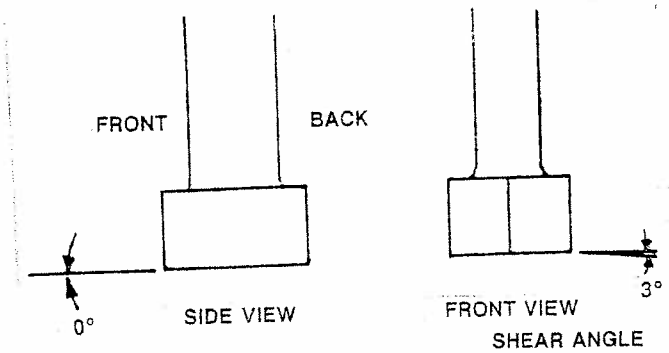


FIG. 3

ADJUSTMENT: ALIGNMENT OF PUNCH & DIE

Under normal operating conditions the punch enters the die approximately 1/32″ . An entry more or less than 1/32″ will produce unsatisfactory looking teeth. When you sharpen the punch and die you have to replace the amount of metal taken off with spacers on top of the punch so that it will still penetrate approximately 1/32″. Extra spacers have been provided with your retoother.

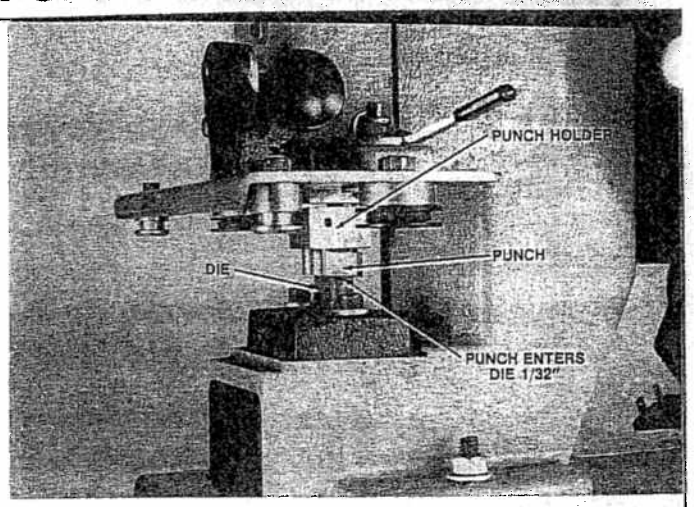


FIG. 35

PUNCH & DIE INSTALLATION

When reinstalling punch in punch holder you may have to grind some of the spacers so that the front channel on the punch is free and clear and will mount in the punch holder smoothly.

Lower punch to its lower point by handcranking flywheel. Slide the die holder up against the punch and tighten the cap screws on the die holder.

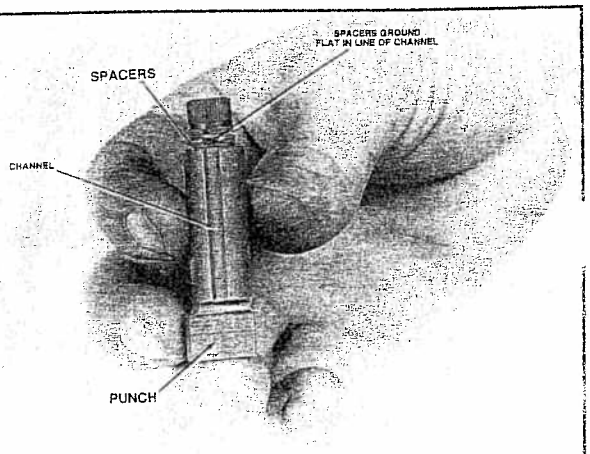


FIG. 36

CHECK PUNCH & DIE ALIGNMENT

Check alignment by placing a piece of paper between punch and die and slowly turn the flywheel by hand. If setting is correct, you should get a clean sharp die cut without ragged edges and no tearing in the bottom of the "V" notch. If not, readjust die until a clean cut can be obtained.

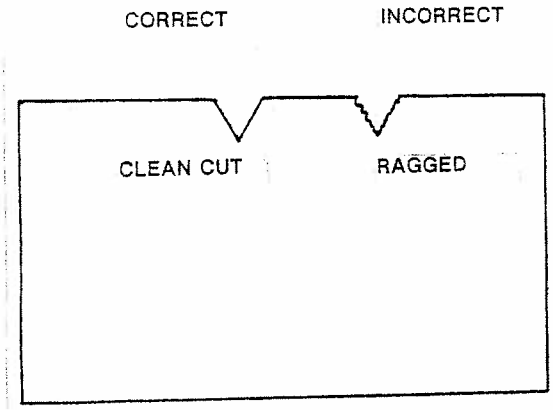


FIG. 37

ADJUSTMENT: ADJUSTING THE GIB BUTTONS

ADJUSTING OF GIB BUTTONS

The gib button and screws are adjusted to keep your punch holder from moving from side to side. When properly adjusted, the punch will move up and down freely but with no side play.

As time goes on the gib buttons will wear slightly and need adjusting. To adjust, first remove die holder casting.

Loosen jam nuts. To tighten gibs, turn gib screws clockwise. Note, when making adjustments, turn the flywheel by hand. If an increase in turning effort is noticed, the gibs are set too tight.

Lock jam nuts and install die and die holder.

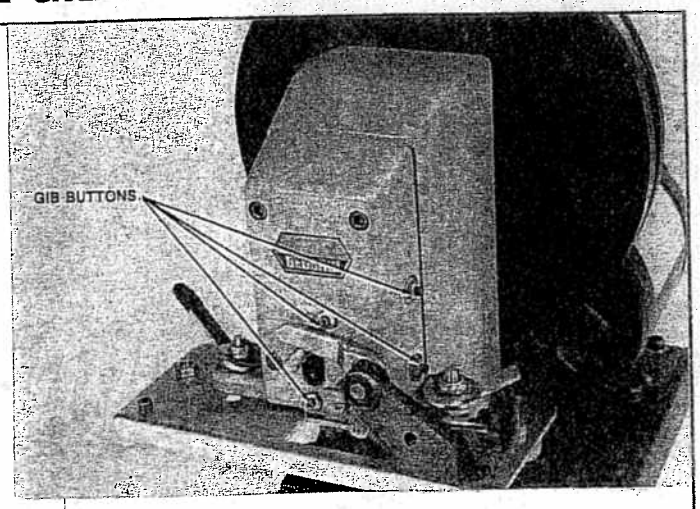


FIG. 38

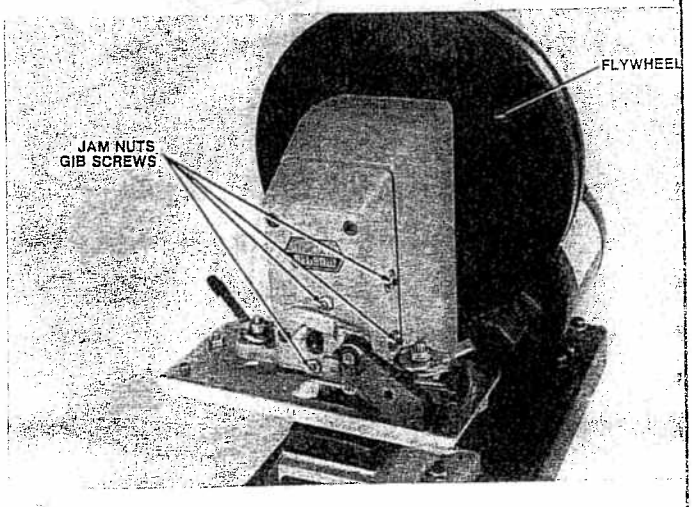


FIG. 39

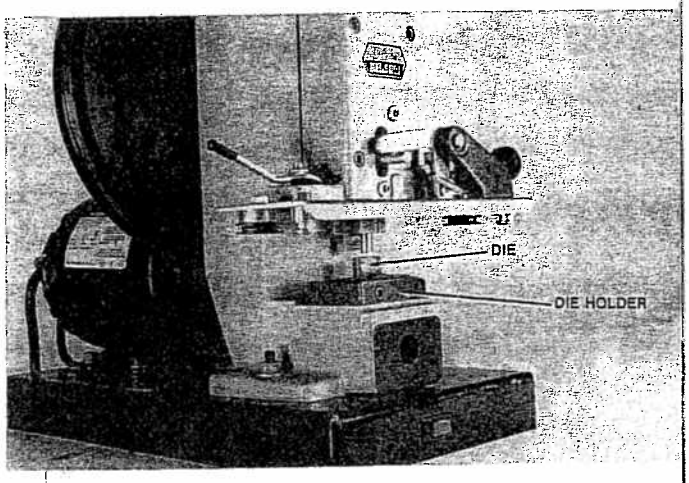
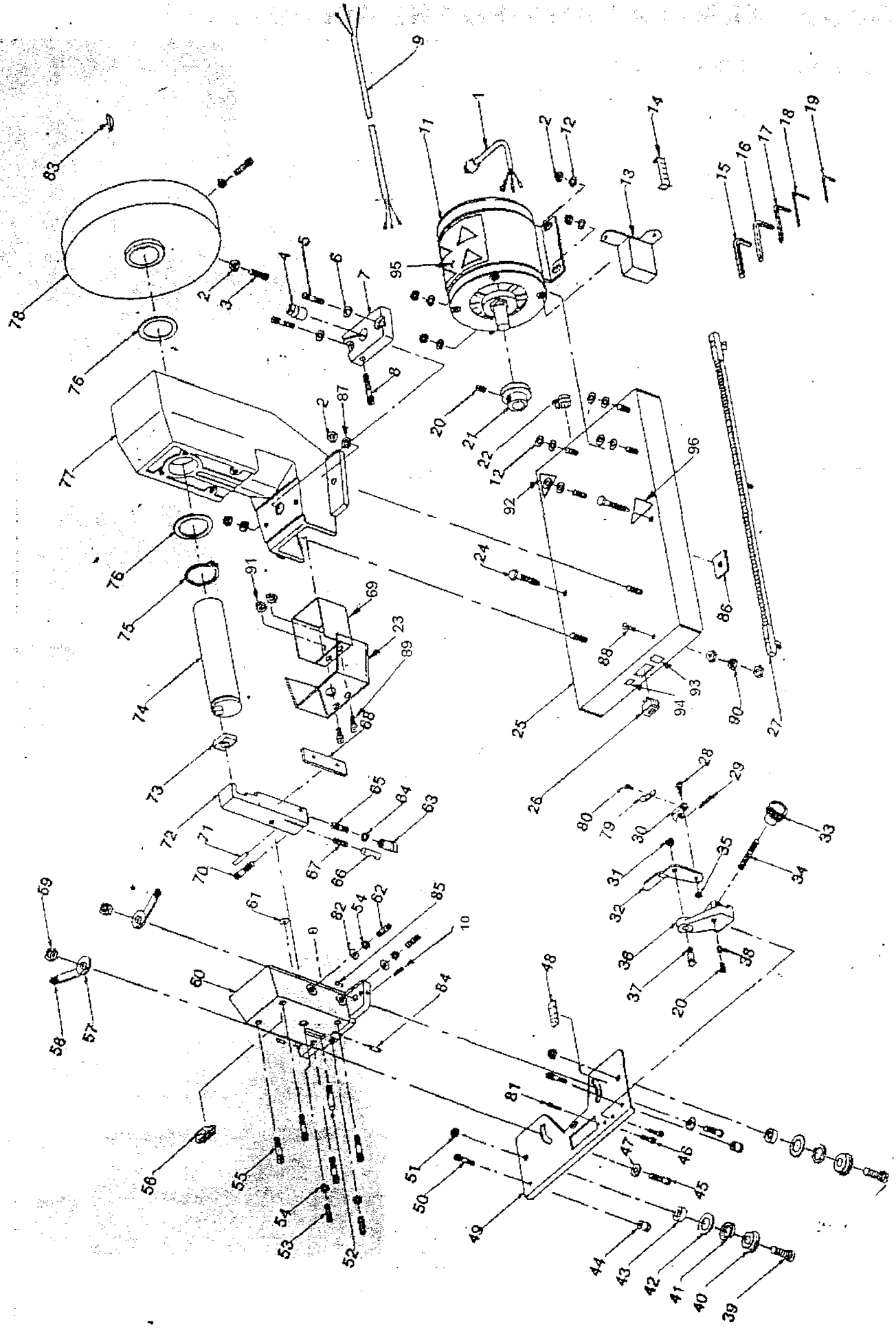


FIG. 40



PARTS LIST:

DIA. NO.	PART NO.	DESCRIPTION
1	3707034	Cord Set
2	J311000	Hex Nut 5/16-18 NC
3	C311624	Socket Set Screw 5/16-18 NBC x 1" Long
4	3859033	54° Die
5	B251611	Socket Cup Screw ¼-20 x 1" Long
6	3249162	Die Holder Washer
7	3859004	Die Holder
8	B252411	Socket Cap Screw ¼-20 NC x 1½" Long
9	3859054	Cord (Motor to Switch)
10	H060402	Roll Pin 1/16 Dia. x 1/4 Long
11	3707985	Motor ½ HP
12	K310001	Plain Washer 5/16
13	3859013	Rear Guard
14	3249149	Carrier Gauge
15	R000857	Allen Key 3/16 Across Flats
16	R000856	Allen Key 1/8 Across Flats
17	R000858	Allen Key 3/32 Across Flats
18	R000859	Allen Key 3/32 Across Flats
19	R000867	Allen Key 9/64 Across Flats
20	C250420	Socket Set Screw ¼-20 NC x ¼ Long
21	3589043	Friction Drive Wheel
22	3707273	Strain Relief
23	3859012	Front Guard
24	E254003	Lag Screw ¼ x 2½" Long
25	3859570	Base
26	3707031	Rocker Switch
27	3859507	Ratchet Bar Assembly 13-7-4 Points
	3859508	Ratchet Bar Assembly 8-4-½ Points
	3859509	Ratchet Bar Assembly 9-5 Points
	3859510	Ratchet Bar Assembly 10-5-½ Points
	3859511	Ratchet Bar Assembly 11-6 Points
	3859514	Ratchet Bar Assembly 14-7-½ Points (Optional)
	3859515	Ratchet Bar Assembly 15-8-4-½ Points (Optional)
28	3249131	Feed Pawl Pivot Screw
29	3709050	Extension spring
30	3859521	Feed Pawl Pin Assembly
31	J191000	Hex Nut 10-24 NC
32	3859032	Feed Lever
33	3709017	Knob
34	3859023	Stud ¼-20 x 2 3/8" Long
35	J131000	Hex Nut 6-32 NC
36	3859005	Base Feed Arm
37	3859030	Feed Pawl Pivot Screw
38	3579109	Nylon Plug
39	3879330	Eccentric Screw
40	3879309	Top Carrier Roller
41	3709641	Quad "O" Ring
42	3709646	Washer
43	3859043	Spacer
44	3859024	Guide Block
45	E312000	Carriage Bolt 5/16-18 NC x 1¼" Long
46	B190811	Socket Head Cap Screw 10-24 NC x ½ Long
47	3709027	Thrust Washer
48	3859036	Hook Scale
49	3859350	Carrier Sub Plate
50	B190611	Socket Head Cap Screw 10-24 NC x 3/8" Long

PARTS LIST: CARRIER BAR ASSEMBLIES