DEPARTMENT OF THE ARMY TECHNICAL MANUAL

Operator's Manual

SAW, BAND,

METAL CUTTING

(BOICE-CRANE CO. MODEL 2325)

(3419-222-1330)

This copy is a reprint which includes current pages from Changes 1

HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1965

Change
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, *9 May 1973*

Operator's Manual
SAW, BAND,
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(BOICE-CRANE CO. MODEL 2325)
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TM 9-3419-224-10, 8 June 1965 is changed as follows:

The title is changed to read as shown above.
Page 3. Add the following paragraph.

1-4.1 Reporting of Equipment Publication Improvements
The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to: Commander, US Army Weapons Command, ATTN: AMSWE-MAS-SP, Rock Island, IL 61201.

Paragraph 1-10 is superseded as follows:

1-10. Components of the End Item
Parts included with the end item and considered as components of the end item configuration are listed in the following table:

Table 1. Components of the End Item

Components	*Part No.*	*(FSCM)*
BELT, V.	1060	(07866)
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BLADE, BANDSAW: flex , back raker set, 1/8 w, 0.025 in thk, 14 teeth per in.	GGGB421	(81348)
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BLADE, BAND SAW:	2773558	(07866)
FILE, BAND:	2350	(07866)
FILE, BAND:	2351	(07866)
GUIDE, MITER:	2502	(07866)
JAW, GUIDE:	2300-82	(07866)
JAW, GUIDE:	2300-81	(07866)
KIT, FILE GUIDE:	2314	(07866)

Page 39. The Appendix is superseded as follows:

APPENDIX
BASIC ISSUE ITEMS LIST

AND
ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

1. Scope

This appendix lists basic issue items and items troop installed or authorized required by the crew/operator for operation of the Metal Cutting Band Saw.

2. General

This Basic Issue Items List and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List. Not applicable.

b. Items Troop Installed or Authorized List. Not applicable.

3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

b. Description. Indicates the Federal item name and a minimum description required to identify the item. The last line indicates the reference number followed by the applicable Federal Supply Code for Manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designed manufacturer or distributor or Government agency, etc., and is identified in SB 708-42. Items that are included in kits and sets and listed below the name of the kit or, set with quantity of each item in the kit or set indicated in front of the item name.

c. Unit of Measure (U/M). Indicates the standard or basic quantity by which the listed item is used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation, e.g., ea, in., pr, etc., and is the basis used to indicate quantities. When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

d. Quantity Furnished with Equipment (Basic Issue Items Only). Indicates the quantity of the item furnished with the equipment.

e. Quantity Authorized (Items Troop Installed or Authorized Only). Indicates the quantity authorized to be used with the equipment.

f. Illustration (Basic Issue Items Only). This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number*. Indicates the item number used to identify each item called out in the illustration

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General, United States Army
Chief of Staff

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Major General, United States Army
The Adjutant General

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Armies (3) except	Ft Knox Fld MS (10)
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NG & USAR: None

For explanation of abbreviations used, see AR 310-50.

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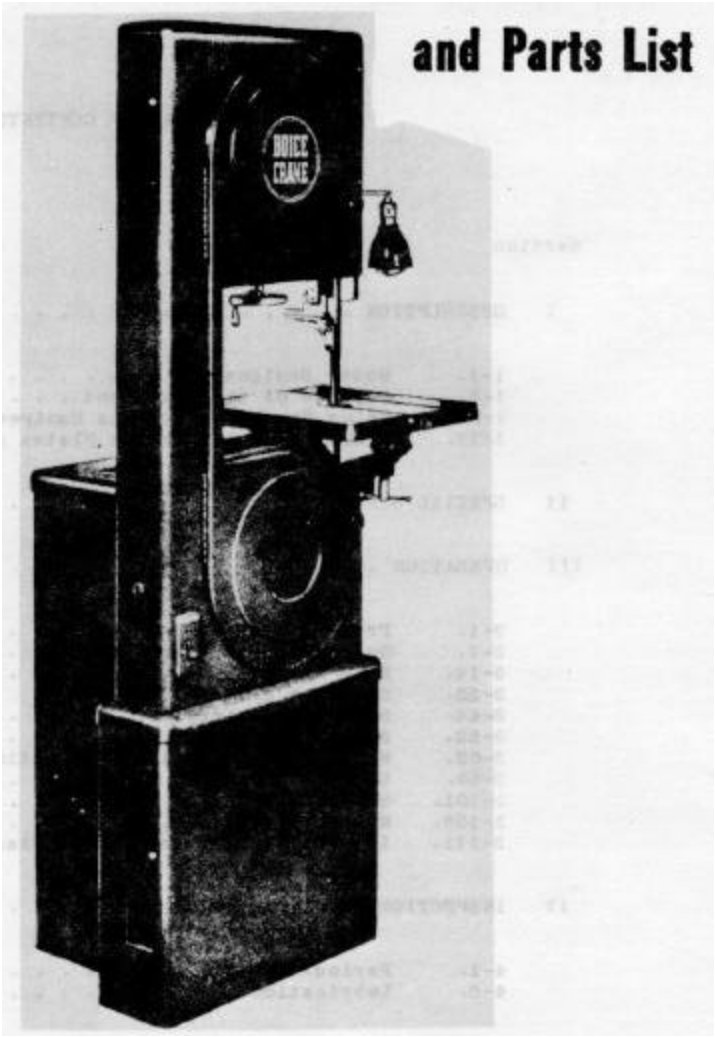
Service Manual



BOICE-CRANE

Figure 1-1. Combination 14” CONTOUR SAW & BAND-FILER

Section I
Paragraphs 1-1 to 1-13

SECTION I
DESCRIPTION

1-1. MODEL DESIGNATION

1-2. This handbook contains Descriptive Data and Operation and Service Instructions, as well as Repair Parts List for Boice-Crane No. 2325 and No. 2326 14-inch Combination Contour Saw & Band Filer.

1-3. This equipment is covered by USAF Specification No. 50470-A dated 14 March, 1947.,

1-4. This equipment is identified by the contractor as the Boice-Crane Model No. 2324 Metal Cutting Band Saw with Filing Attachment.

1-4.1 Reporting of Equipment Publication Improvements

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1-5. PURPOSE OF THE EQUIPMENT.

1-6. SAWING AND FILING. The purpose of this equipment is to saw or file straight or irregular shapes in practically all materials. By means of an eight-speed transmission in the machine, the speed of the wheels may be changed which will permit, when equipped with the proper band saw blade or band file, the sawing or filing of various materials.

1-7. MAKING MECHANICAL PARTS. This equipment has its greatest application in the making of irregularly shaped mechanical parts of various materials in small quantities; usually one or two pieces. These features make this machine a highly useful item in a repair or maintenance shop.

1-8. This equipment may also be used to advantage in performing certain types of operations on duplicate pieces in moderate quantities.

1-9. MAJOR COMPONENTS OF THE EQUIPMENT.

1-10. Components of the End Item

Parts included with the end item and considered as components of the end item configuration are listed in the following table:

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The general appearance of the machine is as shown on figure 1-1. This picture shows the band filing attachment mounted in place on the machine.

1-11. BAND FILING ATTACHMENT. This attachment is a device for supporting and guiding the band file at the machine table. It consists of a hardened steel channel which passes through the table and guides the band file, The guide channel is held with brackets which mount in place of the conventional band saw guides. (See figure 3-1.)

1-12. THE BAND FILES consist of a series of short file segments riveted to a steel band which is run on the band saw wheels at slow speed and functions as a continuous file.

1-13. SCREW FEED DEVICE. The screw feed device is an attachment which bolts to the front of the band saw table and is used to feed the work piece into the blade and to control its direction when making a sawing cut. (See figure 3-11.) The use of this attachment, relieves the operator of considerable effort and permits faster sawing.

1-14. MITER GUIDE. The miter guide is a device for making accurate square or angular ,saw cuts. It consists of an adjustable work support or head mounted on a rectangular bar which slides in a groove in the machine table parallel to the saw blade. (See figure 3-12.) The work support may be adjusted to make square cuts or at any angle up to 45 degrees with the blade.

1-15. WELDER FOR BAND SAW BLADES. The blade welder is a device for use in making internal saw cuts such as when sawing a round hole. It consists of an automatic butt-welding device with blade holding clamps, an annealing mechanism and a motor driven grinding wheel. (See figure 3-14.)

1-16. When it is desired to make an internal saw cut, the saw blade is cut in two and one end passed through a drilled hole in the work piece. Both ends of blade are then clamped in the welder for butt-welding and annealing. The Joint is ground smooth and the blade replaced on the wheels of the machine for sawing.

1-17. LOCATION OF INSPECTION PLATES AND DOORS.

Fig. No.	Index No.	Name of Part	Access to
3-4	7	Upper Wheel Door	Upper Wheel
3-4	1	Lower Wheel Door	Lower Wheel
3-6	5	Gear Box Breather and Filler Hole Access Door	Gear box breather and filler hole
3-6	12	Motor Compartment Door	Gear box controls, V-belt and pulleys, driving motor, wheel and blade speed chart, two holes for bolting machine to floor

SECTION II

SPECIAL SERVICE TOOLS

2-1. GENERAL. There are no special tools required to operate or maintain this band saw. All operations and maintenance work can be performed with standard mechanics' tools.

2-2. BLADE WELDER. The blade welder and grinder supplied with this machine is a repair tool relative to the band saw blades only and It is intended for use in welding band saw blades together after they have been broken through usage or for the purpose of doing internal sawing. The use of this equipment is described in paragraphs 3-115 through 3-120.

Section III
Paragraphs 3-1 to 3-16

SECTION III

OPERATION

3-1. PREPARATION FOR USE.

3-2. UNPACKING. Remove protective materials from machine, components and accessories; also corrosion protective compounds which are soluble in either kerosene or gasoline.

3-3. ANCHORING TO FLOOR. If machine is to be used in a building, it need not be bolted to floor. If mounted on the bed of a truck or trailer, bolt down. Four holes for bolting are provided two outside and two inside motor housing. Use 5/16-inch bolts or lag screws. Level machine if necessary with wood or metal shims.

3-4. BLADE WELDER. Use 1/4-Inch screws or bolts to fasten blade welder to suitable bench or other support provided at location of use.

3-5. TRANSMISSION BREATHER. Remove breather screw from gear box cover as per instruction plate (figure 3-6, reference 6) on top of motor compartment and screw it in the tapped hole alongside the filler plug.

3-6. POWER CONNECTIONS. Motor is wired to switch, and light is connected so that it is always son' when motor is running. Extension cord with twist-lock type of cap is connected to switch so that it is only necessary to plug into the power supply to run the machine. The blade welder likewise has an extension cord and rap, ready to plug into the power supply. Power for both should be 110 volts, 60 cycles, single-phase alternating current.

NOTE

If power source is a portable generator, capacity should be 2 kva if machine and blade welder are not operated simultaneously; 3 kva if they are.

3-7. OPERATING PROCEDURE.

3-8. PRELIMINARY ADJUSTMENTS. This is a multi-purpose machine tool, and such adjustments and control settings as apply to it vary as work alternates between filing and band sawing. Instructions covering adjustments and control settings are in paragraphs 3-13 through 3-62, following.

3-9. CONTROLS. The only operating control is the OFF-ON SWITCH located to the left of the lower wheel guard. It controls the motor and the light which are interconnected.

3-10. TO START. After installing and adjusting the blade or file and selecting the proper wheel speed for the particular job of either band sawing or filing, explained in paragraphs 3-13 through 3-62, it is only necessary to flip up the motor starting switch toggle to start the machine.

3-11. OPERATION OF THE EQUIPMENT. The Boice-Crane Model 2324 is a combination band saw and band filer. With the blade welder attachment, it will do sawing and filing both internal and external.

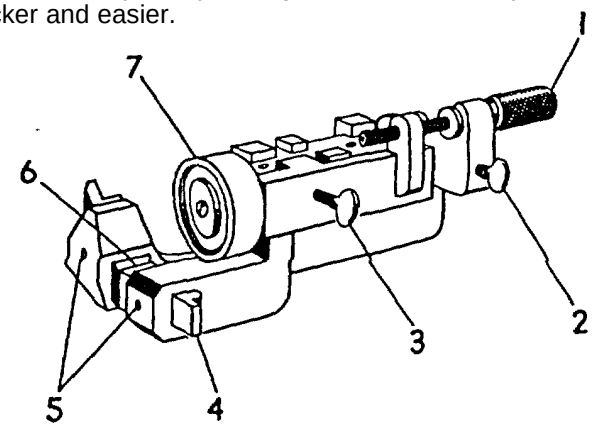
3-12. To prepare this machine for either of the two main classes of work, and then for a specific Job of one or the other, it is necessary to attach a pair of guides for either band sawing or band filing as the case may be, and a band saw or band file.

3-13. The Installation and adjustment of the various attachments necessary to prepare this machine for doing the two types of work are explained in the following paragraphs.

3-14. BAND SAW GUIDES.

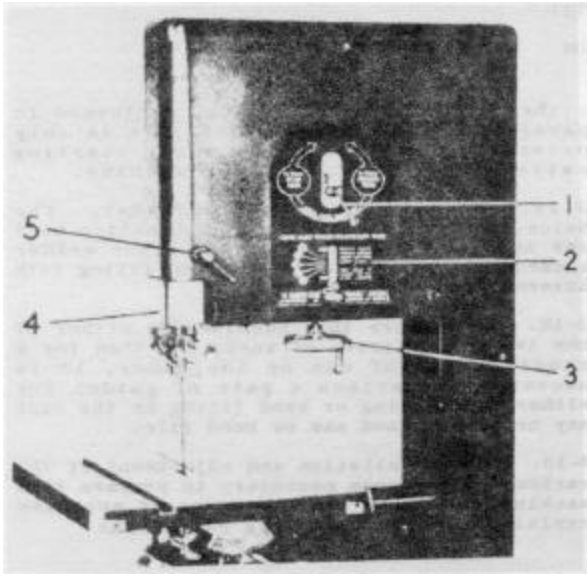
3-15. SAW GUIDE INSTALLATION. Simply slide the guide assemblies on to their respective tracks as far back as they will go. Guide with short adjusting screw goes above table.

3-16. SAW GUIDE ADJUSTMENT. Careful blade guide adjustment is necessary for top-notch band saw performance. The guides on this Boice-Crane band saw have been specially designed to make adjustments quicker and easier.



1. Adjusting Screw
2. Jaw Thumb Screw
3. Roller Thumb Screw
4. Side Jaw
5. Jaw Setscrews
6. Side Jaw
7. Blade Roller

Figure 3-1. Band Sawing Guide



1. Blade Tracking
2. Blade Tension Scale
3. Blade Tensioning Handwheel
4. Telescoping Blade Guard
5. Telescoping Guard Locking Screw

Figure 3-2. Band - Saw Upper Rear-View

3-17. Adjustments to both upper and lower guides are necessary EVERY TIME blades of different width or thickness are installed.

3-18. SIDE-GUIDE ADJUSTMENT. (See figure 3-1.) Begin the guide adjustment by setting the square side jaws (4 and 6) in proper "fore and aft" relation to the blade. Properly set, the blades run well into the Jaws of the guide almost to the base of the teeth. Do this by loosening thumb screw (2) and tightening thumb screw (3) and moving the Jaw assembly backward or forward with adjusting screw (1) ; then lock both thumb screws (2 and 3).

3-19. The hardened steel side Jaws should be set and securely set-screwed into position so there is just a "hair" of clearance between them and the blade. (See reference 5.)

3-20. The flush or square-end side jaws are used most universally as they are intended for practically all wood cutting and for metal cutting blades wider than 1/4 inch.

3-21. The ends that are machined to provide a sort of half-lap Joint fit are especially useful in metal cutting, using blades 1/4 inch or less in width on small radius work. Their advantage is that with the blade backing support provided by the back of the halflap, the blade cannot be forced so far back on a short turn that it slips out of engagement or over the edge of the guide roller.

3-22. Clearance of 1/32 inch should be left between BOTH the back of the half-lap Joint of the side Jaws and between the roller. in other words, when pressure is applied against the blade in normal cutting, the back of the blade should touch the bottom of the half-lap Joint and roller simultaneously.

3-23. ROLLER ADJUSTMENT. The blade roller (7) should always be set so that 1/32 inch gap exists between it and back of the blade when machine is not cutting. Position the roller by loosening thumb screw (3) , tightening thumb screw (2) and moving the roller assembly back or forward with adjusting screw (1) ; then tighten both screws (2 and 3).

CAUTION

Upper blade guide may be raised or lowered by loosening locking screw (figure 3-2, reference 5) at rear of machine securing the telescoping blade guard assembly. It should always be set as near to the work as possible.

3-24. SAW GUIDE REMOVAL. Loosen both thumb screws (figure 3-1, references 2 and 3) and slide complete guide assembly forward off its track. It may be necessary to tilt table a few degrees for lower guide to clear ribs under table.

3-25. BAND SAW BLADE.

3-26. BLADE INSTALLATION. Shift backgear control lever (figure 3-5, reference 7) on gear box to "down' position to disengage reduction gears, and pull out clutch (4) on main drive shaft. Wheels then rotate easily by hand.

3-27. Slide the complete upper and lower blade guides (figure 3-1, references 1, 3, 4 and 5) as far black as they will travel on their respective tracks.

3-28. Grasp the right-hand portion of blade in both hands, with hands spaced about 10 inches apart, and pass blade into table slot. Be sure the part of the blade in your right hand has the teeth pointing forward and downward. As blade approaches front table trunnion, tilt portion of blade above table to right and portion below table to left, at an angle of about 45 degrees, to allow blade to pass front table trunnion. After blade has passed trunnion, hold blade upright to pass through remainder of table slot, and thence into opening in center of table.

3-29. Thread upper portion of blade between upper wheel and telescoping guard, around upper wheel, and finally around lower wheel.

3-30. Holding blade in position on upper and lower wheels, increase blade tension by means of blade tensioning handwheel. (See figure 3-2, reference 3.) Scale and pointer on back of machine provides tension scale for most used blade widths. (See reference 2.)

Section III
Paragraphs 3-31 to 3-40

3-31. BLADE TRACKING ADJUSTMENT. Now stand at right side of machine so that the blade tracking screw (1) can be reached with the right hand, and upper wheel with the left hand for the purpose of rotating wheel, and also so that the blade position can be seen on face of upper wheel AT ALL TIMES.

3-32. With fingers of left hand placed against flat surface of upper wheel near the rim, rotate upper wheel clockwise very slowly, and WATCH blade closely. If blade creeps to one edge, consult chart at rear of machine which informs how to move blade tracking lever to overcome a particular creeping tendency of blade. Should blade start to run entirely off the wheel, stop rotating wheel clockwise and rotate counterclockwise which will cause blade to return toward center.

3-33. Adjust blade tracking screw a further amount, rotate wheel clockwise, and watch whether blade still persists in creeping to edge. If so, adjust a little more until blade ceases to creep and runs steadily in center of wheel.

3-34. Narrow blades such as 1/8 inch width are more difficult to track. If rubber tire has too much "crown'' (high in center) , it is even more difficult to track a 1/8-inch blade, whereas a wider blade such as 3/8- inch is easier to track on a rubber tire with more "crown". The 1/8-inch blade will run off the high crowned tire, whereas the 3/8-inch blade will run to center of wheel face. Actually, a rubber tire low in the center is better for a 1/8-inch blade, but it would not be good for a 3/8-inch blade. Since a compromise must be reached, it is best to crown the rubber tire, and always run the 1/8-inch blade back against the guides, which will prevent it from running off wheel to the rear.

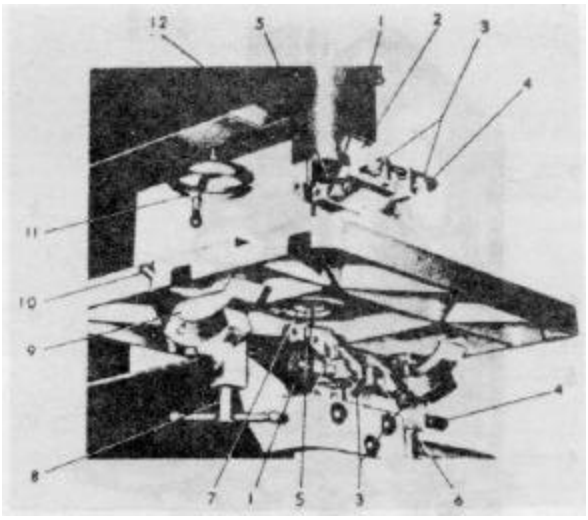
3-35. On the assumption that blade is now tracked as well as you are able to make it while rotating wheel manually, it is advisable to make a final readjustment now to blade tension as in paragraph 3-30 and to follow up with a re-check on blade tracking once again. Any change in blade tension will usually require some correction in tracking, and vice Versa

3-36. In paragraph 3-26 you were Instructed to shift backgear control lever to 'down" position and disengage clutch by pulling it “out', to enable you to rotate upper wheel easily by hand. Consequently, if you start motor with lever in ”DOWN” position, and if clutch should happen to be “in”, band saw will run at one of the higher speeds and, if blade Is TRACKED IMPERFECTLY by even the slightest amount, blade will RUN OFF THE WHEELS.

CAUTION

DO NOT START MOTOR YET. THERE is ONE WORE STEP TO PERFORM in TRACKING THE BLADE.

3-37. Before starting motor, throw backgear control lever to 'top' position which will reduce speed of machine to one of its lowest speeds, depending upon belt position on cone pulley.



1. Blade Roller
2. Guide Mounting Block
3. Thumb Screws
4. Adjusting Screw
5. Side Jaws
6. Lower Guide Track
7. Table Insert
8. Table Locking Screw
9. Table Tilt Scale
10. Table Slot Dowel Pin
11. Blade Tensioning Handwheel
12. Telescoping Blade Guard

Figure 3-3. View of Table and Sawing Guides

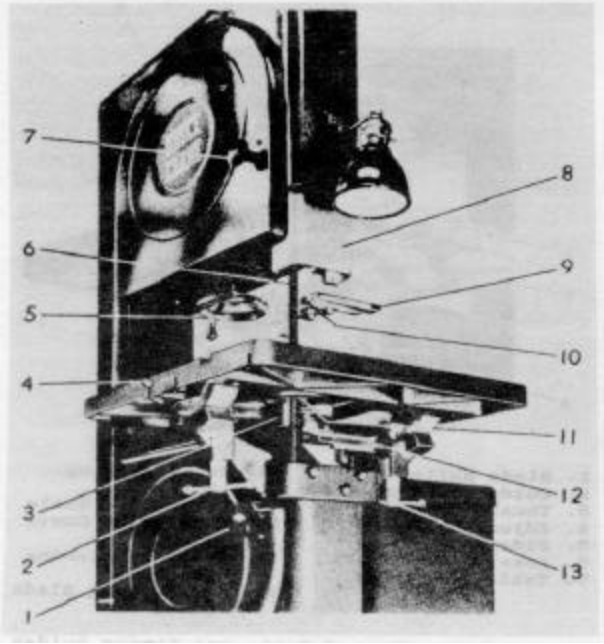
3-38. With backgear control lever positioned to run machine at slow speed; namely, with lever in 'TOP' position, and clutch on main drive shaft pulled "OUT", you may now start motor. With guard doors partially open, watch carefully how blade tracks over wheels. No doubt a very slight readjustment will be needed under power.

3-39. Now set machine to run at the speed required for the particular blade, and for the particular sawing job to be done.

CAUTION

If the speed called for is faster than that at which tracking was performed, you should check how blade tracks at this faster speed. It is a good idea to 'Jog' the motor (quick on-off flip of the switch) to see how blade tracks, before you allow motor to run steadily.

3-40. Adjust setting of the blade guides, both above and below the table, as described in paragraphs 3-14 through 3-23. Replace the taper pin in the table slot and replace the table insert in the table.



1. Lower Wheel Door
2. Table Locking Nut
3. Lower File Guide Holder
4. Table Slot Dowel Pin
5. Blade Tensioning Handwheel
6. Band File
7. Upper Wheel Door
8. Telescoping Blade Guard
9. Upper Guide Track
10. Upper File Guide Bracket
11. Table Insert
12. Lower Guide Track
13. Table Locking Nut

Figure 3-4. View of Filing Guides and Table

NOTE INVERTED BANDS

Sometimes when a blade is incorrectly uncoiled, the blade appears to have Its teeth pointing downward ON THE BACK EDGE. If this happens, simply turn blade "inside out" and teeth will be correctly pointing downward on the front edge.

3-41. BLADE REMOVAL. Remove dowel pin (figure 3-3, reference 10) from slot in table. Remove sawing insert (7) from table.

3-42. Raise upper sawing guide on telescoping guard (12) to a position midway between frame and table. Lower the upper wheel by means of handwheel (11) until blade is loose.

3-43. Open upper and lower doors (figure 3-4, references 1 and 7). Take blade in both hands, one hand above table, one hand below table, and move blade forward in slot of table. When blade reaches front trunnion, tilt blade to right above table, and to left below table, to allow blade to pass front table trunnion. The blade is now free of all obstructions, and can be easily removed.

3-44. BAND FILE GUIDES. (See figure 3-4.)

3-45. FILE GUIDE INSTALLATION. It is best to attach file guides after file band is in place and tracking properly in center of wheel. Attach upper bracket assembly (10), which includes holder and file guide, to upper guide track (9) with hex cap screw and washer. Adjust the bracket assembly so that band runs freely in groove of band file guide; then lock in place. Raise telescoping guard (8) until lower end of file guide is near surface of table. Attach lower bracket and holder (3) to its track (12) and tighten hex cap screw lightly with the fingers. Lower telescoping guard (8) until end of file guide just touches lower holder; then adjust the holder assembly along track (12) so that file guide slips into holder groove without being forced aside. Lock lower bracket.

3-46. FILE GUIDE ADJUSTMENT. It should not be necessary to change sidewise adjustment often. Back of file band should just touch surface of guide. If guide is set too far forward, it will be forced out of its natural path between the wheels. If guide is set too far back, band will not be supported sufficiently along edges, and may be forced sideways out of guide when filing.

3-47. Spin wheels slowly, by hand, to see if band runs freely in groove of guide. If band does not track in groove properly, adjust tilt of upper wheel slightly.

NOTE
A slight adjustment in tilt of wheel is all that is required.

3-48. Move upper file guide forward until it properly engages the band in its natural running position and lock in position. No sideways adjustment should be needed provided rubber tires have not been dressed since file band was used previously.

3-49. Move telescoping guard (8) down until file guide almost touches lower guide holder (3). Adjust lower support so that file guide slips into groove without being forced aside, and lock in position.

3-50. Place round filing Insert (11) in work table opening.

3-51. FILE GUIDE REMOVAL. Take out hex cap screws which hold the file guide holder assemblies to the guide tracks (9 and 12) and remove entire assemblies from machine. Upper and lower tracks are not disturbed. Do not disassemble the holder and bracket assemblies and in most cases it will not be necessary to make front to back adjustment on later installation and use.

Section III
Paragraphs 3-52 to 3-80

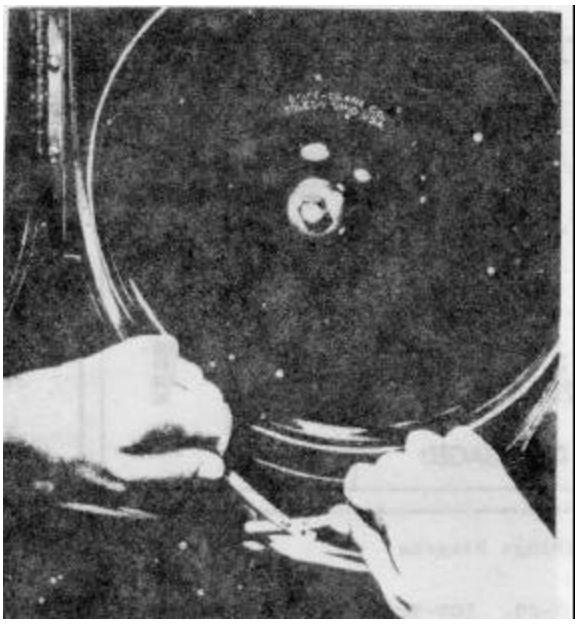


Figure 3-5. Band File Joint

3-52. BAND FILES.

3-53. BAND FILE INSTALLATION. Shift back gear control lever (figure 3-6, reference 7) on gear box to "down" position, to disengage reduction gears. Pull out clutch (4) on main drive shaft. This will permit wheels to rotate easily by hand.

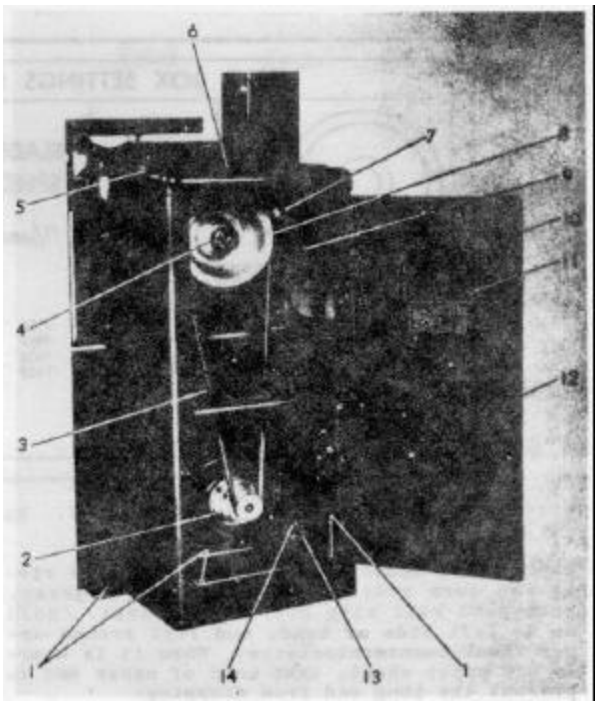
3-54. If proper file guide is not already in place, refer to paragraph 3-24 for removing saw guides, and paragraphs 3-45 through 3-50 for attaching file guide.

3-55. Place band file (figure 3-4, reference 6) over upper wheel and through table slot, with about a foot of band extending below table. Be sure teeth of file cut down on right-hand side of machine. Turn ends at 90 degrees to each other as shown in figure 3-5, put elongated slot over Tee-head rivet, turn ends so that they are now parallel, and slip round hole over dowel-head rivet.

3-56. Place jointed band over lower wheel, and adjust upper wheel so that there is very little tension on band, just enough to prevent vibration; in other words, JUST TAUT AND NO MORE - NEVER UNDER HEAVY TENSION.

3-57. Select the proper filing speed, engage backgears, and start motor to see if band tracks in center of wheels, and check tension so that there is a minimum of "whip' on left hand side of band, which moves up. Then stop motor.

3-58. BAND FILE TRACKING ADJUSTMENT. The procedure for tracking the band file is the same as for a band saw blade which is described in paragraphs 3-31 through 3-38. The tracking of the band file must be done with the file guides moved back out of the way of the band unless there has been no change in the adjustment of the machine since the last time a band file was used.



1. Floor Bolt Holes
2. Motor Pulley
3. Driving V-belt
4. Sliding Jaw Clutch
6. Gear Box Filler Access Cover
7. Backgear Control Lever
8. Gear Box Pulley
9. Gear Box
10. Speed Change Plate
11. Cutting Speed Plate
12. Motor Compart ment Door
13. Wing Nut
14. Adjusting Screw

Figure 3-6. Rear View Showing Driving Mechanism

3-59. BAND FILE REMOVAL. (See figure 3-4.) Remove filing insert (11) from table. Raise telescoping guard (8) so that bottom is halfway between frame and table. Lower upper wheel by means of handwheel (5) until band is loose.

3-60. Open upper and lower doors (1 and 7). Move band by rotating upper wheel by hand until joint is about one foot below table. Pull band forward below table and insert thumb nail, or thin piece of metal under end of band at joint.

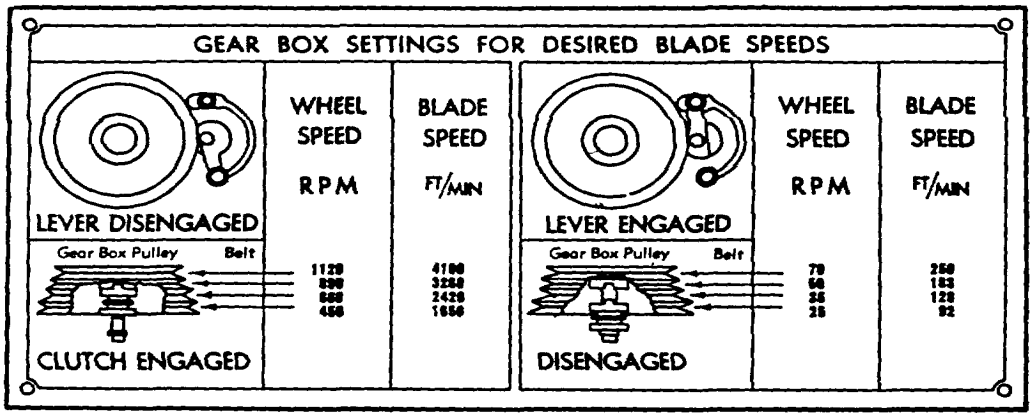


Figure 3-7. Speed Change Diagram

3-61. Lift loose band end above head of rivet and turn ends of band about 90 degrees, when band will slip over "Tee" rivet. Hold on to left side of band, and roll around upper wheel counterclockwise. When it is nearly off upper wheel, take hold of upper end to prevent the long end from dropping.

3-62. Coil band file and store as suggested in paragraph 3-95.

3-63. WHEEL SPEED CHANGING INSTRUCTIONS.

3-64. GENERAL. This machine is an eight speed band saw so arranged as to have two ranges of speeds, high and low. The changing from one range to the other is accomplished with a two-speed gear box of the 'backgear' type. The various settings of the gear box are shown in figure 3-7.

3-65. HIGH-SPEED RANGE. The high-speed range gives wheel speeds of 1120, 890, 660 and 450 rpm. To obtain these speeds, shift the gear box as follows:

a. Shift backgear control lever (figure 3-6, reference 7) DOWN to its DISENGAGED position. (See marking on gear case.) This takes backgears out of mesh.

b. Slide jaw clutch (4) IN to ENGAGE the clutch. This gives a direct drive from pulley to band saw wheel. It may be necessary to turn pulley by hand a little to line up clutch jaws. Be sure to slide clutch ALL THE WAY in to fully engage jaws.

c. Change the V-belt (3) to the proper set of grooves for the speed desired as per diagram (figure 3-7). When shifting V-belts, it is easier to shift OUT OF LARGER diameter pulley FIRST, then shift smaller pulley and shift in TO LARGER pulley LAST.

3-66. LOW-SPEED RANGE. The low-speed range gives wheel speeds of 70, 50, 35 and 25 rpm. To obtain these speeds, shift the gear box as follows:

a. Slide jaw clutch (figure 3-6, reference 4) OUT to DISENGAGE clutch. This disengages pulley from wheel shaft.

b. Change the V-belt (3) to the proper set of grooves for the speed desired as per diagram (figure 3-7).

c. Shift backgear lever (figure 3-6, referents 7) UP to the ENGAGED position. This puts backgears in mesh. It may be necessary to turn the pulley by hand a little to line up gear teeth so that they will slip into mesh properly.

CAUTION

Do NOT try to make any of the above changes while machine is running. ALWAYS WAIT until wheels have stopped dead.

Do NOT START MOTOR when both clutch and lever are set in their respective ENGAGED positions. in this setting the gear box is LOCKED and will not turn.

3-67. BELT TENSION. The driving V-belt (3) does not have to be drum tight to transmit all the power of motor. With adjusting strew (14) in motor base, part of the weight of motor can be taken off belt. Belt is too loose when it vibrates widely, and curves away from pulley on loose side. A little more belt tension will straighten out belt, and stop vibration.

3-68. When belt is at correct tension, it is possible to shift from one groove to another without raising motor. Keep wing nut (13) tightened to prevent screw from turning under vibration of running parts.

Section III
Paragraphs 3-69 to 3-88

3-69. GENERAL OPERATING TECHNIQUE.

3-70. SAWING. When straight cutting, use the widest saw blade possible. It will saw straighter, and absorb more feed pressure. A narrow saw blade will weave in cut, especially under heavy feed pressure.

3-71. Use coarse teeth on soft material, fine teeth on hard material. Use coarse pitches on thick material, fine pitches on thin material.

3-72. When sawing curves, use the widest saw blade adapted to the curve you are cutting. An experienced operator will be able to saw sharper radius than shown in the following chart.

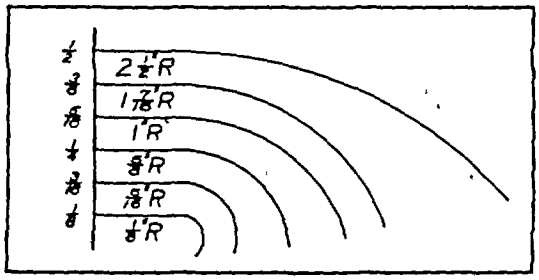


Figure 3-8. Sawing Radius Chart

3-73. Select a saw with tooth size such that three or more teeth are in contact with the work at all times. However, when sawing thin stock this is impossible and may be possible to keep only two, or even one tooth, in contact.

3-74. Use 14-tooth saw for general purpose cutting over 3/16 inches thick.

3-75. Use 18-tooth saw for light structurals, tubing and sheets, 1/8 to 1/2 inch thick.

3-76. Use 24-tooth saw for very thin sheets and tubing under 1/8 inch thick.

No Teeth in saw per in.	Minimum Thickness of Stock		
	3 teeth in contact	2 teeth in contact	1 tooth in contact
14	.214	.143	.071
18	.167	.111	.056
24	.125	.083	.042

Table 1

3-77. Though not recommended, if it becomes necessary to saw stock thinner than 1/16 inch (.062 inches) with the 14-tooth blade, chatter will occur as stock Jumps from tooth to tooth. Very little pressure should be applied or teeth may be sheared oil.

3-78. Metal about 1/32 inch (.032 inches) thick will jump, chatter, bend into opening of table insert and altogether be very difficult to cut with any blade unless attached to, or placed between, some thicker metal, fiber or plywood to stiffen it.

3-79. Chatter can occur if thin sheets are curved or warped and not supported at point of sawing.

3-80. If a tooth breaks off in work, it must be removed at once or it will dull entire blade, or rip out more teeth.

3-81. Coarse-tooth saws cut faster.

3-82. Fine-tooth saws produce a smoother finish.

3-83. Chips from most materials will be curled at proper speed and feed.

3-84. Cast iron produces granular chips at any speed or feed.

3-85. A small radius, 1/4 inch or less, should be drilled and not cut. For greater accuracy and smoother finish on thicker stock, the hole should be reamed. Do this before sawing.

3-86. For squaring up corners, the saw can be used as a file with moderate accuracy.

3-87. When cutting curves, pressure should be exerted as in arrows of figure 3-9.

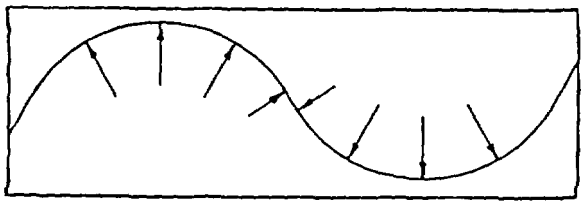


Figure 3-9. Sawing Pressure Diagram.

3-88. WHY SAWS GET DULL.

a. Speed too high for material being cut.

b. Material too hard.

c. Heat treated steel may be too hard, or cast iron may have chilled spots.

d. Welded cast iron may be hard alongside the weld.

e. Welded alloy steel may be hard unless cooled slowly or annealed.

f. Some fibers or plastics may contain abrasive material that will dull saws regardless of sawing speed.

3-89. Premature blade dulling occurs from using too fine a tooth and feeding too heavily.

3-90. HOW TO TELL WHEN SAW is DULL.

a. Cuts slowly or not at all when fed by hand.

b. Heavy screw feed pressure required, that may even force guides back on their tracks.

c. Teeth bright on cutting edge.

d. With machine stopped, running ringer slowly over teeth in cutting direction shows no sharp edges that 'bite'.

e. Difficult to follow a line. Blade forces to one side or another.

f. Chips granular.

3-91. SAFETY PRECAUTION. When a cut is nearly complete, keep hands and fingers away from front of saw. When pushing with the fingers, and cut abruptly ends, usually 1/16 inch or so before you think you are finished, work will break through and your hand will Jump forward suddenly. Use a “pusher”; a notched piece of wood or metal to both push and hold down. (See figure 3-10.)

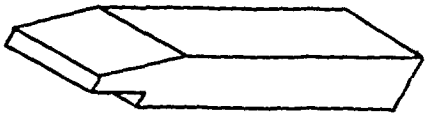


Figure 3-10. Drawing of “Pusher”

3-92. FILING. Filing speeds are slower than sawing speeds. Only the two slowest speeds of 25 and 35 rpm are ever used for filing.

3-93. Too such tension will shear off connecting rivet.

3-94. Keep file teeth clean. If teeth are clogged, clean with wire brush. Loaded files bump and slide over work; do not cut. Loaded files scratch work.

3-95. When storing bands do not hang them over a single peg. Use two pegs 10 inches or more apart, or a semicircular support, 10 inches in diameter, or use original shipping carton.

3-96. Keep chips cleaned out between band and file blanks. Charcoal or chalk may prevent teeth from loading

3-97. Use medium pressure for rough filing.

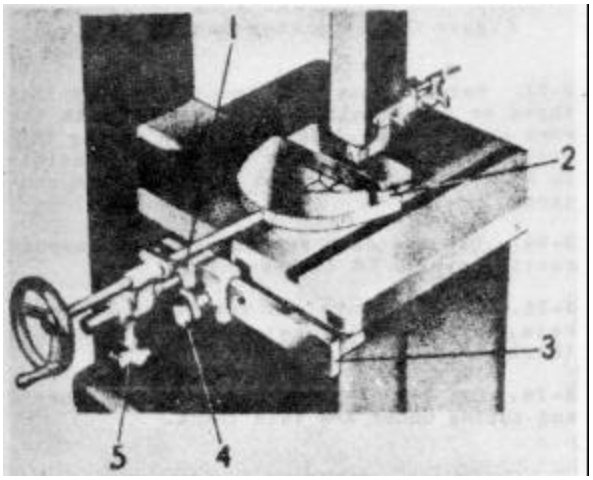
3-98. Use light pressure for finish filing, with slow sideways motion, which will leave file marks vertical. A rapid sideways motion will result in diagonal lines and poor finish.

3-99. Do not exert heavy pressure or gullets will fill, or connecting rivet may shear off. Release tension on band when not in use. A file band should cut efficiently for 125 hours or more If properly used.

3-100. File bands can be used for both external and internal filing, because they have a keyed, separable joint.

CAUTION

If rivets become loose, use a punch that will enter counterbored hole in file blank. Line blanks and band up properly, place support under head of rivet, and tap punch lightly several times rather than use one or two heavy blows.



1. Feed Screw Half Nut
2. Work Holding Vee-Block
3. Lateral Slide Bar Assembly
4. Slide Locking Screw
5. Feed Screw Bracket Locking Screw

Figure 3-11. Screw Feed Device

3-101. SCREW FEED DEVICE. (See figure 3-11.)

3-102. GENERAL. The screw feed device should be used when hand feeding pressure is Inadequate as on cutting steel 1/4 inch or more thick. Use only in connection with wide, coarse tooth metal cutting blades. The finer the tooth, the less cutting pressure can be applied - hence cut is slowed.

Section III
Paragraphs 3-103 to 3-117

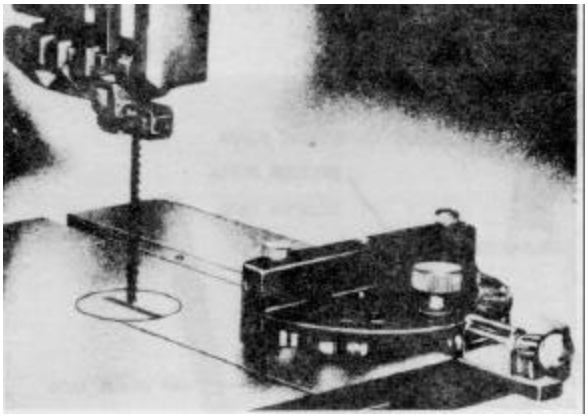


Figure 3-12. Miter Guide

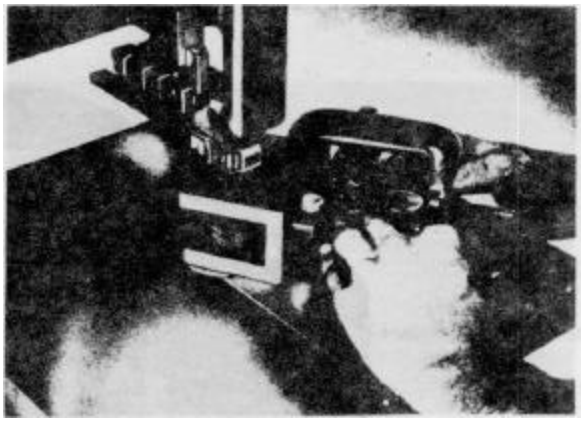


Figure 3-13. Use of Clamp on Miter Guide

3-103. Cutting fluid or blade lubricant will often speed the cut when cutting steel with the screw feed.

3-104. Never use a dull blade with the screw feed.

3-105. The screw feed is set up for use by attaching the lateral slide bar assembly (3) to the underside of machine work table with two hex-head cap screws. (Bar may remain on work table at all times.) The screw feed assembly is then mounted on the slide bar on which it may be adjusted laterally and locked in place with the slide locking screw (4). The feed screw bracket is locked to the cross slide post with locking screw (5).

3-106. The hinged and spring-loaded half nut (1) permits quick lead-screw positioning against notches of the work holding vee-block (2).

3-107. The vee-block holds various round, square or hexagonal shapes without clamping. Notches are provided so that feed screw pressure can be applied straight ahead; or at an angle that compensates for the natural "lead" of some blades (chiefly narrow blades) ; alto at a series of directions necessary to cut involved contours or arcs.

3-108. MITER GUIDE. (See figure 3-12.) This is used for making square or angular cuts. With table tilted, any compound miter can be cut up to 45 x 45 degrees. End stop can be used to cut duplicate parts to length.

3-109. Fixed stop screws are set for 45, 90 and 45 degrees. To turn the head release knurled nut over slot, pull back plunger engaging groove in adjusting screw, and set at desired angle.

3-110. Should the setting of the three fixed angles need adjusting, loosen lock nut on grooved adjusting screw, and turn screw until the proper setting is reached. Make a cut with a sharp saw and check with an accurate combination square. Be sure to clamp work to guide when making a 45-degree cut, and start cut slowly. This “cut and try” method is a sure way to obtain an accurate setting.

3-111. INTERNAL SAWING AND USE OF BLADE WELDER.

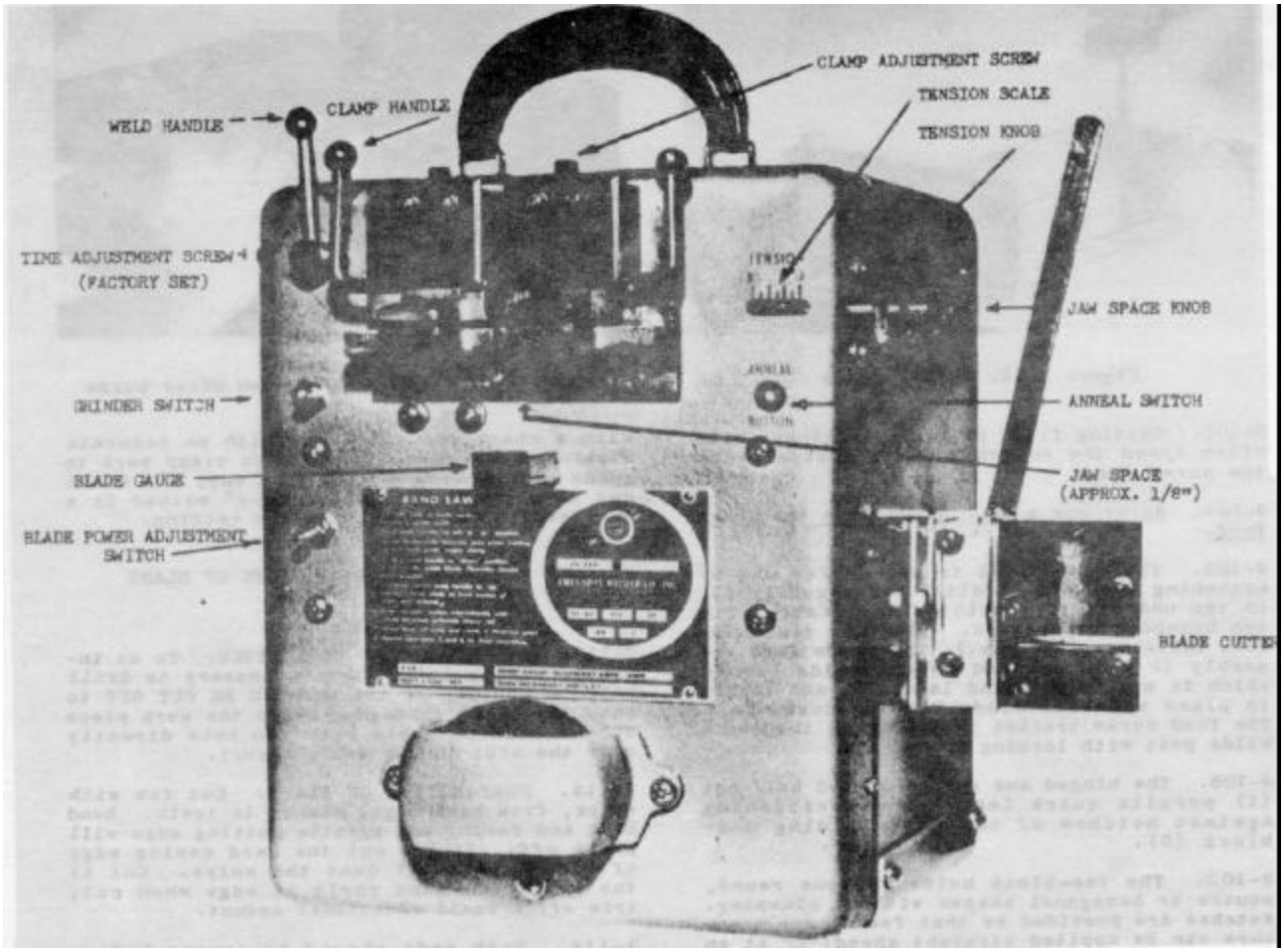
3-112. PREPARATION OF WORK PIECE. To do internal sawing it is first necessary to drill hole in portion of the work TO BE CUT OUT to pass the blade through. Place the work piece on the machine table with the hole directly over the slot in the table insert.

3-113. PREPARATION OF BLADE. Cut saw with snips, from back edge, almost to teeth. Ben(back and forth, and brittle cutting edge will break off. If you cut the hard sawing edge of blade, you will dent the snips. Cut at the weld. If band curls at edge when cut, trim off a small additional amount.

3-114. Both ends should be square before welding. With teeth pointing forward and down, insert blade through hole in work, and move ends to blade welder.

ILLUSTRATED OPERATING INSTRUCTIONS

NEW AMES BAND SAW BLADE WELDER



OPERATING PROCEDURE

1. WELD HANDLE should be in “UP" position.
2. Set POWER BLADE ADJUSTMENT switch. "UP" for 3/8" to 3/4" width blades. "DOWN” for 1/8" to 3/8" width blades,
3. Set JAW SPACE to approximately 1/8".
4. Adjust TENSION towards low area for narrow blades or high area for wide blades. Center area produces good results for 3/8" blades.
5. Cut blade ends square. Place blade in jaw with teeth flush against back. Blade ends must meet in center of Jaw spacing.
6. Clamp blade. Both clamp handles should be approximately 45 degrees when clamped. If not, use clamp adjusting screws to correct pressure. Use hand pressure only.
7. "FLIP" WELD HANDLE to left. Don't hold it back during its movement.
8. Unclamp blade.
9. Return WELD HANDLE to "UP" position.
10. Position blade in forward open section of Jaws which gives wide open area on blade for annealing. Use clamps again.
11. Press ANNEAL SWITCH with short duration strokes until weld area becomes almost cherry red. Allow blade to cool before unclamping.
12. Use grinder to remove flash.
13. Repeat annealing operation.
14. Read OPERATING INSTRUCTION MANUAL for detailed information.

ADDITIONAL INSTRUCTIONS

CONDITION	CAUSE	REMEDY
Blade overlaps at weld area.	Spacing between the jaws is too wide.	Spacing should be approximately 1/8".
Insufficient upset or flash (A good weld should have enough metal expulsion. Grinding will then produce solid smooth surface).	Too much tension,	Reduce tension.
Blow hole in weld.	Not enough tension.	Increase tension.
	Spacing between the Jaws is too wide.	Decrease space.
	Blade edge not sheared square.	Opposing edges must butt evenly.
Poor alignment of welded blade edges.	Blade teeth not clamped properly against back of jaws.	Clamp each end carefully against back of Jaw.
	Blade bent when cut.	Be sure blade is flat.
	Upper Jaws not clamping blade evenly.	Adjust upper Jaws so they clamp evenly.

OPERATING INSTRUCTIONS FOR AMES BAND SAW BLADE WELDER
MODELS 28-460 AND 28-461
WITH NEW LOW POWER SWITCH FOR NARROW & WIDE BLADES

1. INSTALLATION

a. Mount the welder on the blade welder bracket attached to the side of the band saw or the welder can be mounted on any flat surface. The two mounting brackets supplied on the base of the welder must be remounted after they are rotated 180 degrees. This procedure will provide four holes for mounting of the welder.

b. Connect the power cord of No. 28-460 to 115 Volt, Single Phase, 50 or 60 Cycle, 30 Ampere AC Supply. A 15 Ampere Circuit is not suitable for the 115 Volt welder. Use 230 Volt, Single Phase, 50 or 60 Cycle, 15 Ampere AC Supply for No. 28-461. Do not use an extension cord. Full line voltage is required for good welds. Fluctuating, high or low line voltage, may vary settings.

2. OPERATION

a. Square off both ends of the band saw blade with the shear. With the shear handle vertical, insert the blade with teeth against the blade guide. (If the blade teeth wear a groove after long use, the steel faces of the guides should be reversed.) Hold the blade firmly against the guide with the left hand while operating the shear handle with the right hand.

In trimming the ends of the blade, allow for the length of metal which will be compressed in the weld so that the original tooth spacing will be retained.

b. The spacing between clamps should be approximately 1/8 inch. This setting is obtained by turning the space adjustment knob.

c. Set TENSION indicator pin to center of scale. Turning the "tension" adjustment knob varies the initial tension on the movable clamp. The initial spring tension determines the pressure that will be applied between the saw blade ends during the welding process. More tension is required for wide blades. To adjust the settings for each width of blade, perform several experimental welds, setting the tension at different points. When the settings for the best widths have been selected, make a note of it for future reference.

Wood cutting band saw blades are usually made of lighter gauge and softer steel than those used for metal cutting. Therefore, the welding characteristics are different, requiring less tension. Blades and clamp Jaws must be free of oil and chips for best results.

d. The POWER ADJUSTMENT SWITCH is for the purpose of reducing the output of the welder when narrow blades are welded. It is factory calibrated to the "Down" position for 1/8" to 3/8" width blades. The "Up" position is for blades 3/8" to 3/4" in width.

e. Place weld handle in vertical position.

f. Holding both clamp handles in a vertical position, insert the blade ends, one at a time, into the jaws, with blade teeth against the back of guide. Center the ends in the space between the jaws so ends just touch each other. Clamp the Jaws with clamp handles. Adjust jaw opening, if necessary, by turning the jaw adjusting screws, in or out. When correctly adjusted, the clamp handles will be at an approximate 45° angle when the blade is clamped in the jaws.

g. Wear safety glasses to protect eyes. Flip weld handle to the left. The saw blade is welded automatically. Unclamp jaws. Move weld handle to vertical position.

h. To anneal, move saw blade to front section of the Jaws (teeth still pointing to the rear). Operate the "anneal button" intermittently until saw blade becomes a uniform cherry red.

i. Allow blade to cool. Unclamp Jaws and remove blade.

j. Turn the grinder switch to "on" and grind off the flash around weld. Use light grinding pressure only to avoid stalling the grinding motor or causing a thin spot which would weaken the blade at the weld. Hold the blade slightly curved to avoid grinding other than where the flash is found in the weld. Check weld thickness in the thickness gauge.

k. Repeat "f." for final annealing. Dark blue should be satisfactory.

3. TIME ADJUSTMENT

The time adjustment screw (upper left side) has been factory set and should not be reset unless the power systems do not meet the rated voltage. If necessary, this screw may be adjusted by loosening the locknut. Turning the time adjusting screw inward will reduce the size of the flash. If the screw is backed out, the size of the flash will be increased. Care must be taken not to turn the screw in or out too far. When the screw is turned in too far, no flash will occur. If the screw is backed out too far, the flash can persist until the weld handle is placed in the vertical position. After any adjustment, be sure to snug up the locknut so that the time adjustment screw will retain its setting.

4. REPLACEMENT OF GRINDING WHEEL

a. Use only resonoid or bakelite bonded aluminum oxide wheels.

b. Remove grinding wheel guard and arbor nut.

c. Remove grinding wheel and install new one.

d. Re-assemble arbor nut and guard.

IF NECESSARY, WRITE U. S. WELDER EXPLAINING ANY DIFFICULTY AND AWAIT THEIR INSTRUCTIONS. IMPORTANT! WHEN REQUESTING SERVICE OR PARTS, BE SURE TO STATE THE COMPLETE MODEL AND SERIAL NUMBERS AS SHOWN ON THE INSTRUCTION PLATE FASTENED TO THE FRONT OF THE WELDER AND INCLUDE SEVERAL SAMPLES OF WELDED BLADES. YOU WILL GET IMMEDIATE ADVICE. WARRANTY IS VOID IF WELDER IS TAMPERED WITH.

DO NOT RETURN WELDER UNLESS AUTHORIZED. THE SHIP PREPAID.

U. S. WELDER & MACHINE CORP.
65-33 AUSTIN STREET
REGO PARK 74, NEW YORK

SECTION IV

INSPECTION AND LUBRICATION

4-1. PERIODIC INSPECTION.

4-2. GENERAL. For proper operation and performance this machine should be inspected periodically according to the following schedule for indications of a need for maintenance.

4-3. INSPECTION WEEKLY OR AFTER EIGHT HOURS USAGE. The machine should be checked once every eight hours or one week, whichever case applies, as follows:

a. INTERIOR OF MACHINE. Open upper and lower wheel doors (figure 3-4, references 1 and 7) and check interior of machine and check chute for accumulation of chips and saw dust and clean out to prevent chips from getting into any mechanism.

b. WHEEL TIRES. Check for accumulation of chips and saw dust on the face of the tires which would tend to deform the proper crown of the tire and thus prevent blade from tracking properly. Clean tires and restore crown according to paragraph 5-38.

4-4. THREE-MONTH INSPECTION. The machine should be checked every three months as follows:

a. BLADE GUIDES. Check upper and lower blade guides (figure 3-3, references 1 and 5) for excessive wear on guiding surfaces and loose or sticking operation of blade back-up roller. Correct faulty guides according to paragraphs 5-15 through 5-21.

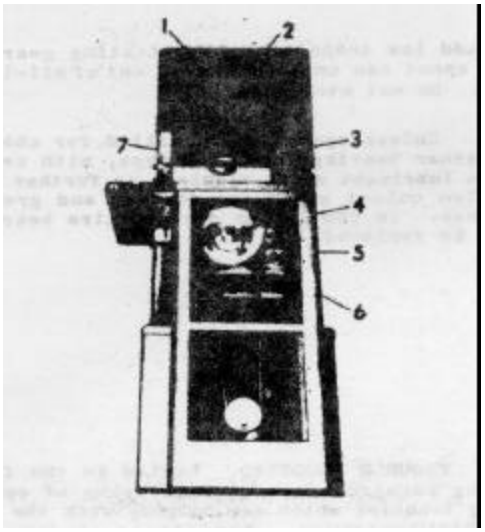
b. WHEEL TIRES. Inspect upper and lower wheel tires for grooving, loss of crown and cracks in rubber and looseness of tire on wheel which are indications that tire may be worn out. Correct or replace tires according to paragraphs 5-36 and 5-37.

c. MOTOR BEARINGS. Open motor compartment door (figure 3-6, reference 12) and check motor bearings for looseness. by grasping the pulley (2) and exerting force both up and down and sidewise to the shaft. Any looseness will be evident by feel and sound. A worn bearing will be most noticeable in direction of belt pull. Worn bearings should be replaced.

d. MOTOR BELT. Check the driving V-belt (3) for excessive wear, fraying or separation. Replace faulty belt with a new one.

e. GEAR BOX. Inspect gear box for leakage of oil around pulley shaft. (See figure 4-1, reference 6.) If leakage is excessive, it will be necessary to replace oil seals. Refer to paragraph 5-33.

Section IV
Paragraphs 4-5 to 4-9



1. Indicates location of Upper Wheel and Slide Plate
2. Blade Tracking Screw
3. Blade Tensioning Handwheel
4. Sliding Jaw Clutch
5. Backgear Control Lever
6. Gear Box
7. Telescoping Blade Guard

Figure 4-1. Points of Lubrication

4-5. YEARLY INSPECTION. The machine should be inspected once a year as follows:

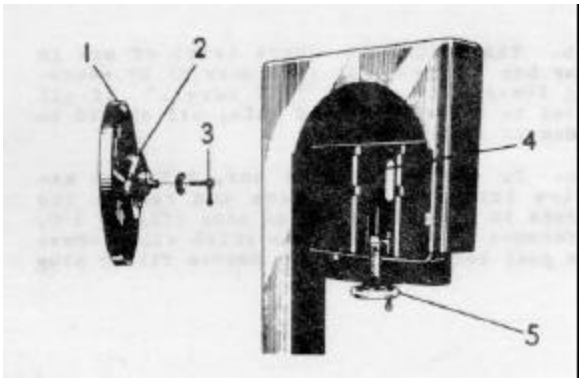
a. MOTOR. Open motor compartment door (figure 3-6, reference 12) and remove motor from machine according to paragraph 5-39. Inspect commutator brushes for excessive wear. Brushes are worn out when the brush holding springs no longer exert pressure on the brushes but instead stop against the brush holder. slot. Worn out brushes should be replaced according to paragraph 5-41. Inspect commutator surface for grooming and wear. Check interior of motor for accumulation of dirt. Refer to paragraph 5-40.

b. GEAR BOX. Inspect gear box for worn bearings and gearing. (See figure 4-1, reference 6.) These conditions are evident when there is looseness and end play in either the pulley shaft or the wheel shaft and excessive backlash in the gearing. Refer to paragraph 5-33.

4-6. LUBRICATION.

4-7. GENERAL. This machine should be lubricated periodically according to the following schedule.

4-8. MONTHLY LUBRICATION. Lubricate the machine at the following points once every month.



1. Upper Wheel
2. Slide Plate Assembly
3. Blade Tracking Screw Handwheel
4. Slide Plate Guideways
5. Blade Tensioning

Figure 4-2. Upper Wheel Assembly

a. TELESCOPING BLADE GUARD. The telescoping blade guard (figure 4-1, reference 7) should be wiped clean and a thin coating of grease applied with brush or finger to all sliding surfaces both on the guard and the square slide bar inside the guard. Slide guard downward to table so as to permit easier access to sliding surfaces.

b. GEAR BOX SLIDING CLUTCH. Open door to motor compartment and apply a few drops of general-purpose lubricating oil to the sliding clutch (4) on the gear box with an oil can to insure free movement on shaft. Operate clutch in and out a few times to distribute oil around shaft.

c. Apply a few drops of general purpose lubricating oil with an oil can to sliding pin in the backgear ,control lever (5). Operate the plunger a few times to insure free movement.

d. GENERAL. Apply a few drops of oil with an oil can to all accessible operating controls or locking screws to insure easy operation.

4-9. THREE-MONTH LUBRICATION. Lubricate the machine at the following points once every three months.

a. UPPER WHEEL SLIDE PLATE. Remove the complete upper wheel and slide plate assembly (figure 4-2, reference 2) behind panel according to paragraph 5-6. (See figure 4-1, reference 1.) Clean the assembly and inspect and lubricate in accordance with instructions in paragraphs 5-7 and 5-8. Apply a light coating of lubricating grease with brush or finger on the blade tensioning screw and thrust washers. (See figure 4-2, reference 5.) Apply a few drops of oil with an oil can to the blade tracking screw. (See figure 4-1, reference, 2 and figure 4-2 reference 3.) Reassemble to the machine in accordance with paragraph 5-9.

b. TRANSMISSION. Check level of oil in gear box (figure 4-1, reference 6) by removing lower plug marked '"Oil Level". If oil level is below bottom of hole, oil should be added as follows:

c. To add oil to gear box, tilt the machine table to 45 degrees and remove two screws in oil filler access door (figure 3-6, reference 5) and open door which will expose the gear box filler plug. Remove filler plug and add low temperature lubricating gear oil with spout can until oil runs out of oil-level hole. Do not overfill.

4-10. Unless specifically called for above, all other bearings are ball type, with sealed-in lubricant which requires no further attention unless seals are damaged and grease escapes. In the latter case, entire bearing must be replaced.

SECTION V
MAINTENANCE

5-1. GENERAL. The maintenance procedures described in this handbook are those that are needed occasionally to keep the machine in first-class operating condition. They can be made without the use of special purpose tools. Machines may be returned to the factory for overhaul if the owner desires. Prepay all shipments, mail full instructions same day shipment is made, and include bill of lading or route and shipping date.

5-2. TROUBLE SHOOTING. Listed in the following paragraph are several types of operating troubles which may develop with the use of this equipment. Opposite each type of trouble is listed the probable cause and the remedy required.

5-3. OPERATING TROUBLES AND REMEDIES.

TROUBLE	PROBABLE CAUSE	REMEDY
WOOD CUTTING SAW BLADE WHIPS AT HIGH SPEED	Improper blade tension.	Check reading of blade tension scale pointer or it may be necessary to disregard scale and adjust tension to eliminate whip.
	Band saw wheel tire rough and uneven.	Correct tire crown according to paragraph 5-36.
METAL CUTTING SAW BLADE WHIPS	Improper blade tension.	Disregard blade tension scale and adjust tension to eliminate whip.
SAW BLADE WILL NOT TRACK IN CENTER OF WHEELS; RUNS OFF TO FRONT OR REAR	Not enough crown on rubber tires.	Correct tire crown according to paragraph 5-38
SAW BLADE WILL NOT TRACK IN CENTER, RUNS OFF WHEEL TO FRONT (1/8 TO 3/18 INCH WIDTH)	Blade not running back against guides.	Adjust upper wheel tilt to throw blade against guides
	Too much crown on rubber tire.	Sand rubber tire more nearly flat. If too flat, then wider blades will not track properly.
BLADE WEAVES FORWARD AND BACK-WARD	Ends of blade not aligned properly when welded together.	Cut at weld; rejoin with back edge in a STRAIGHT line.
BAND FILE DOES NOT RIDE IN GROOVE OF GUIDE	Upper wheel or guide adjustment not properly made.	Tilt upper wheel slightly in proper direction. If band is in center of wheel, move guide forward or backward.
TABLE NOT SQUARE WITH BLADE	90-degree table stop needs adjustment.	Adjust table stop according to paragraph 5-30.

Section V
Paragraphs 5-3 to 5-9

5-3. OPERATING TROUBLES AND REMEDIES. (cont.)

TROUBLE	PROBABLE CAUSE	REMEDY
SPRING LATCH OF GUARD DOES NOT HOLD DOOR SHUT	Catch on door shifted.	Loosen two screws holding door catch; adjust sideways till door is held firmly shut.
ROLLER GUIDES DO NOT TURN FREELY	Water or dust has entered bearing.	Replace with new bearing.
	Metal shield damaged.	Replace with new bearing.
MOTOR WILL NOT START MACHINE. OVERLOAD DEVICE TRIPS SWITCH	Cold machine; stiff grease in gear box.	First run motor without belt to warm up. Put on belt and run gear box only (clutch out, back gear out) to warm up. Put in back gear and run complete machine.
	Gear box locked. (Clutch in and back gears in.)	Pull out clutch. Refer to speed change diagram, figure 3-7.
OVERLOAD PROTECTION DEVICE TRIPS SWITCH REPEATEDLY	Incorrect sized heater element in switch.	Install correct size heater: Allen-Bradley No. P-33, 8.59 ampere rating for 1/2 hp motor. (Original equipment.)
	Current rating of motor too high for heater element.	Install correct heater to match motor amperes. EMERGENCY REMEDY Reconnect switch to by-pass heater element which will allow motor to run WITHOUT OVERLOAD PROTECTION and may burn out motor if load is too severe.
	Line voltage too low.	Increase line voltage to 110 volts.
OIL LEAKS OUT AROUND GEAR BOX MAIN SHAFT	Oil seals worn.	Replace oil seals.

5-4. MAINTENANCE PROCEDURE. The maintenance of this equipment is discussed in the following paragraphs taking each item which may require attention and covering it completely from disassembly to reassembly.

5-5. WHEEL AND SLIDE ASSEMBLY UPPER. (See figure 4-2.)

5-6. REMOVAL. Open upper and lower wheel doors and remove saw blade or band file from wheels and let it hang over table. Remove tracking screw (3). (Also see figure 4-1, reference 2.) Rotate handwheel (figure 4-2, reference 5) to the left until slide plate (2) is completely off screw. The upper wheel assembly can then be lifted up and forward out of the guideways (4). No further disassembly should be necessary for cleaning.

5-7. CLEANING AND INSPECTION. Wipe off or blow off all saw dust, chips and old grease from castings. Inspect bearing for looseness and wear. If shaft is loose in bearing, replace entire bearing. Inspect lock nut holding bearing in wheel and setscrew holding shaft in clapper box for looseness. If loose, tighten them. Inspect threads in tension screw hole slide plate (2) for wear and, imminent stripping. If threads are badly worn, replace slide plate.

5-8. LUBRICATION. Use an oil can to apply few drops of general purpose lubricating oil to the hinge pins; also apply a coating of grease with brush or finger to the slide way grooves.

5-9. RE-INSTALLATION. Place wheel and slide plate into notches in slide way (4) and slide downward to engage tension screw. Rotate the tension screw handwheel (5) to the right to lower the wheel far enough to allow the saw blade to be replaced on the wheels. Install blade or band file and adjust blade tension and tracking according to paragraphs 3-26 through 3-40.

5-10. TELESCOPING BLADE GUARD. (See figure 3-2, reference 4.)

5-11. REMOVAL. Loosen telescoping guard lock screw (5).

NOTE

If the file guide is On machine, remove the upper guide assembly by removing the hexagon cap screw which holds the bracket (figure 3-4, reference 10) on the upper guide track (9). Slide telescoping guard downward until the square guiding bar on inside of telescoping guard is clear of slots in frame.

5-12. CLEANING AND INSPECTION. Clean all dirt and rust from all sliding surfaces. Inspect for burrs or rough spots which may hamper free sliding and file or sand smooth. Check for loose screws holding the guide mounting bar in place and tighten. Clean out saw dust and chips which have collected inside of frame at the guiding slots in which the telescoping guard slides.

5-13. LUBRICATION. Apply a coating of grease to all sliding surfaces with a brush or finger.

5-14. RE-INSTALLATION. Make sure that friction spring is in its socket under locking Screw. (See figure 3-2, reference 5.) Place guard slide bar into lower guiding slot in frame, tilt lower end of bar toward rear and slide upward to pass the spring. Return guard to vertical position and slide upward further until slide bar enters upper guiding notch. Guard is now in place. Re-install blade guide or band file guide. If guide does not line up properly, it may be shifted slightly by loosening the screws which bold the upper guide track to the telescoping guard and then retightening after adjustment.

5-15. BAND SAW GUIDES. (See figure 3-3.)

5-16. REMOVAL. Open upper and lower wheel doors; lower upper wheel with blade tension handwheel (11) and remove band saw blade from machine. Remove dowel pin (10) to allow blade to be taken out of slot in table. Loosen thumb screws (3) on both upper and lower blade guides and slide the guides off the guide tracks. It may be necessary to tilt the. table a few degrees to allow the lower guide to clear the ribs under table.

5-17. CLEANING AND INSPECTION. Remove saw dust and chips from all parts of guide assembly by wiping or with air blow gun. Check blade back-up roller (1) for looseness or for damaged shields, which may cause roller to stick. If either condition exists, the bearing must be replaced. Inspect the guiding Surfaces of the blade guide jaws (5) for excessive wear. If a 'step' or groove has been Worn in the jaw, which would interfere with adjustment, the jaws should be replaced or repaired.

5-18. REPAIR. To replace a worn out blade back-up roller, remove the screw and washer which hold the bearing on to the guide casting and drive off the old bearing by tapping it around the edge with a light hammer. When Installing a new bearing, drive it on to the casting by tapping against the inner race only. Be careful not to dent nor damage the grease seal on the bearing as the damaged seal may interfere with the free rotation of the bearing. Replace screw and washer.

5-19. To repair worn blade guide Jaws, remove the jaws from the jaw holder after loosening the setscrews and grind the guiding Surfaces smooth.

NOTE

Be very careful when grinding not to overheat the jaw end, thus annealing Jaw, which would leave the rubbing surface soft. This work should be done on a surface grinding machine as it is difficult to do an accurate job freehand.

5-20. RE-INSTALLATION. Replace the blade guides on their respective guide tracks. Reinstall band saw blade on machine and check its tracking. If necessary, readjust blade tracking according to paragraphs 3-26 through 3-40.

5-21. ADJUSTMENT. Adjust the blade guides to the saw blade according to paragraphs 3-26 through 3-23.

5-22. BARD FILE GUIDES. (See figure 3-4.)

5-23. GENERAL. The band file guides (3 and 10) are of simple construction and do not require any maintenance except the replacement of the file guide channel when worn.

5-24. INSPECTION AND ADJUSTMENT. Inspection for wear and alignment can be done best with guide on the machine. Move guide out of contact with file band, and see that free running file tracks near center of wheel. Move guide into contact with band, and lock in place. Band should run in groove with little tendency to be forced to one side. If it rubs one side of groove at top, and other side of groove at bottom, wheels may not be crowned evenly, which will prevent band from running in center of both wheels. Some change in tracking of band may result in a better alignment with guide.

5-25. If side flanges of guide become worn and rounded, file band may be forced out of groove when pressure is exerted on side of half oval file. When guide becomes worn, it must be replaced with a new one.

5-26. TABLE ASSEMBLY. (See figure 3-4.)

5-27. REMOVAL. In order to remove the table assembly it is first necessary to remove the band saw blade as described in paragraphs 3-41 through 3-43; or the band file as described in paragraphs 3-59 through 3-62. Remove the file guide, if on machine, according.

Section V
Paragraphs 5-27 to 5-44

to paragraph 3-51. Raise telescoping guard (8) to highest position. Remove the table locking nuts (2 and 13). Table may now be lifted off machine.

5-28. CLEANING AND INSPECTION. Clean off dust and rust. Inspect trunnions of casting for sharp edges that can wear arcs. Inspect lower guide track for burrs and rust.

5-29. RE-INSTALLATION. Put table locking screws and clamp shoes into holes in trunnion casting and at the same time place table in position on trunnions. Replace table locking nuts on lock screws.

5-30. ADJUSTMENT. Put a saw blade or band file on machine and adjust tracking as explained in paragraphs 3-31 through 3-40. Using a mechanic's square, check the squareness of blade to table. If required, adjustment may be made at the 90-degree table stop screw underneath table. Set pointer to zero when table is square with blade.

5-31. MOTOR STARTING SWITCH. To remove switch from machine, first remove two screws in cover plate and then two additional screws under cover can be removed so switch with attaching wires can be pulled out a few inches to inspect all connections. Heater element is in switch under cover. It should be an Allen-Bradley No. P-33, 8.59 ampere rating for 1/2 hp motor rated at 8 amperes. This will permit motor to be overloaded slightly. As long as-switch operates properly, and connections are tight, it is best to leave it alone. If it is not working properly, and the correct heater is used, with voltage between 105 and 125, it is better to replace with a new switch.

5-32. When disconnecting wires, be sure to mark or tag them so that it will be easy to reconnect the same way. Be careful that no loose strands of wire stick out to contact iron frame or cover, thus causing a short circuit.

5-33. GEAR BOX. (See figure 4-1, reference 6 or figure 3-6, reference 9.) Overhaul of this unit should be done only in a shop equipped for general machine overhaul work, otherwise it should be returned for this purpose to the factory.

5-34. WHEEL TIRES.

5-35. CLEANING AND INSPECTION. The band saw wheel tires should be cleaned free of saw dust and chips by scraping with a piece of wood or a wire brush. This operation can be done by turning the wheels by hand or by running the machine by power. Open upper and lower wheel doors for access to the wheels.

CAUTION

If you run machine by power, be CAREFUL NOT to touch the blade. Do ALL CLEANING on the OUTGOING SIDE of the wheel. The reason for this is if operator should lose hold of cleaning tool,' it will not be caught between the tire and blade.

5-36. RECROWNING THE TIRE. If the tire should lose its crown, it may be recrowned as follows:

a. Make a sanding tool by wrapping a piece of medium sand paper or emery cloth around a flat stick about one inch wide.

b. Run the machine at 450 rpm.

c. Open upper and lower doors and hold the sanding tool against the face of the tire and sand the tire to the desired crown. The original crown radius of the tires is 4-3/16 inches.

CAUTION

Always do sanding on the OUTGOING side of the wheels, as that is where the band leaves the wheel. The reason for this is that if operator should lose hold of the tool, it will not be caught between the tire and band.

5-37. REPLACEMENT OF TIRES. When tires are damaged, cracked, or so badly concaved that they can no longer be recrowned they should always be replaced.

Remove the wheel from machine, and then remove the tire.

Remove all old cement and rubber from wheel first using naphtha. Don't apply cement until wheel face is absolutely clean. Then apply an even coat of No. 2306 Rubber Cement to the face of the wheel. Wash the rough or inside face of the new tire with naphtha to remove finger prints, oil, and soapstone. Then apply an even coat of No. 2306 Cement to the rough or inside face of the tire.

Allow newly applied cement to dry about two minutes before putting tire on the wheel. If cement becomes too dry it may be retacked by wiping with a rag wet with naphtha. Place the wheel over a large pin or large bolt held vertically in a vise to hold the wheel in a workable position. New tires require considerable stretching to be put on the wheel. Place the tacky tire on the wheel with the aid of a screw driver. After it is on, roll the wheel on a flat surface to equalize the tension and slide the tire sidewise to bring one side flush with the edge of the wheel.

Allow the wheel and tire assembly to set for about 24 hours and then trim the excess rubber flush with the edges of the wheel. The wheel may now be put back on the band saw and checked for runout of the tire. If the tire does not run true or does not have enough crown which will cause the blade to run off, it should be recrowned according to paragraph 5-36.

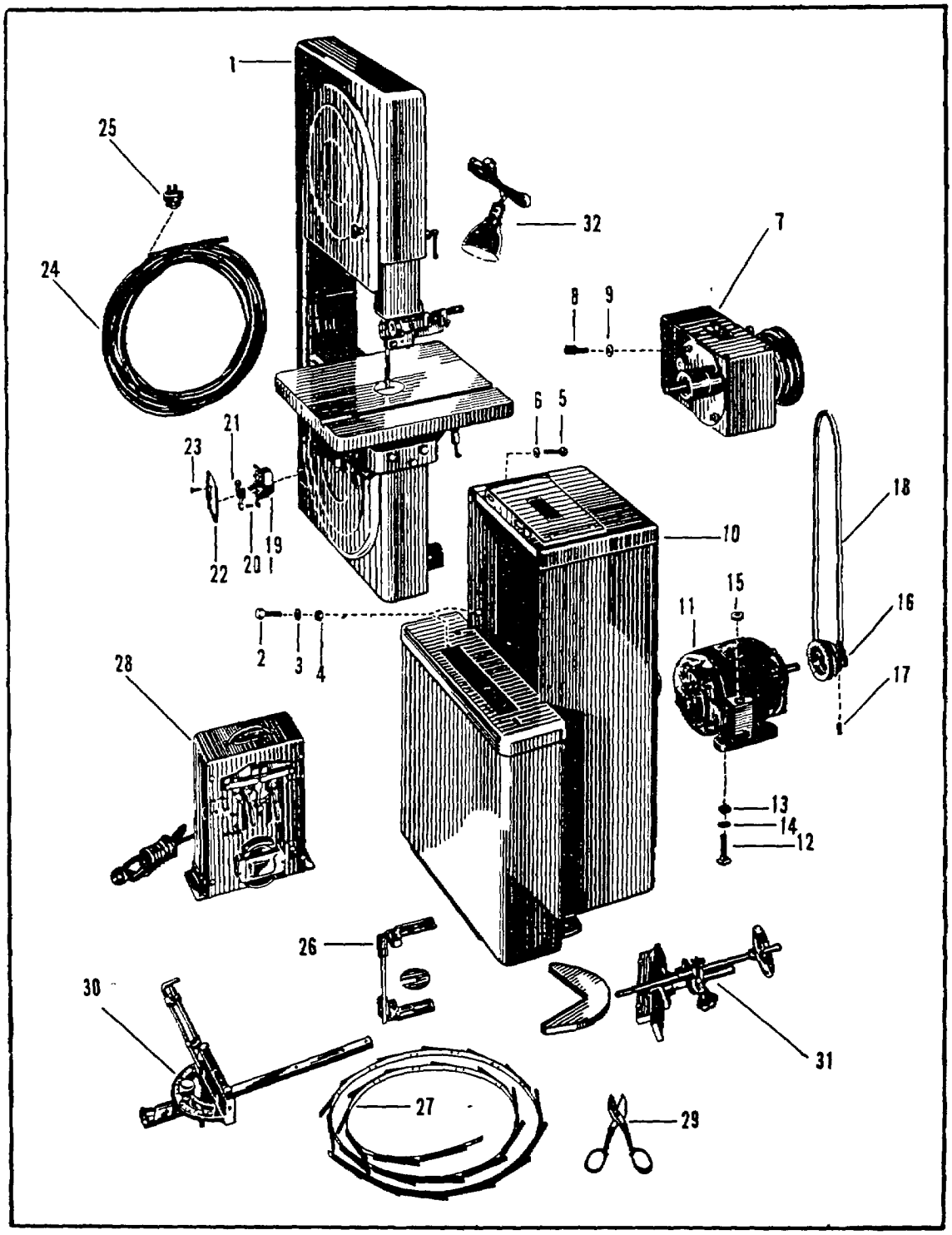


Figure 2. Band Saw Complete - Metal Cutting with Filing Attachment, 14-Inch, Floor Model

SECTION VI
Group Assembly Parts List

SECTION VI
GROUP ASSEMBLY PARTS LIST

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			BOICE-CRANE NO. 2325 AND NO. 2326 COMBINATION CONTOUR SAW & BAND FILERS	
2-	2325		Saw - Band, metal cutting with filing attachment, 14 in., floor model, USAF type C-	Ref
-1	2300	.	Saw Assy - Band, bench model, 14 in. (See figure 3 for breakdown)	1
		.	ATTACHING PARTS	
-2	XCH-212	.	Bolt - Hex hd, steel, 9/16-18 NC-2 x 1 in. long	4
-3	XWH-913	.	Washer - Plain, hot-rolled steel, natural finish, 11/32 ID x 11/16 in. OD x 16 ga	4
-4	XNF-200	.	Nut - Plain hex, steel,.5/16-1B NC-2.	4
-5	XCH-310	.	Bolt - Hex hd, steel, 3/8-16 NC-2 x 3/4 in. long	2
-6	XWH-1115	.	Washer - Plain, hot-rolled steel, natural finish, 13/32 ID x 13/16 in. OD x 16 ga	2
			_____☆_____	
-7	2308-1SA	.	Transmission Assy - Band saw, eight-speed (See figure 9 for breakdown)	1
		.	ATTACHING PARTS	
-8	XCS-309	.	Screw - Cap, socket hd, steel, 3/8-16 NC x 5/8 in. long	4
-9	XWH-1115	.	Washer - Plain, hot-rolled steel, natural finish, 13/32 ID x 13/16 in. OD x 16 ga	4
			_____☆_____	
-10	2301-1SA	.	Stand Assy - Floor (See figure 10 for breakdown)	1
		.	ATTACHING PARTS	
-12	XBM-214	.	Bolt - Sq hd, steel, 5/16-18 NC-2 x 1-1/4 in. long	4
-13	XNR-200	.	Nut - Plain sq steel, 5/16-18 NC-2	4
-14	XWH-1016	.	Washer - Plain, coml std, 5/16 In. bolt size.	4
			_____☆_____	
-15	SP-24	.	Grommet - Lead box (Western Rubber Co., Goshen, Ind.)	1
-16	1101-C	.	Pulley - Vee, four-step, 3/4 in. bore	1
		.	ATTACHING PARTS	
-17	XHC-205	.	Screw - Headless set, hex socket, cup point, 5/16-18 NC-2 x 3/8 In. long	1
		.	_____☆_____	
-18	1060	.	Belt - Vee, A-section, 60 in. outside circ	1
-19	SP-96	.	Switch Assy - Motor starting (Allen-Bradley Co., Milwaukee 4, Wis.) bulletin 600 size C form 52 open type 2-pole manual	1
		.	ATTACHING PART	
-20	XMF-5	.	Screw - Mach, 32 deg flat hd, steel, 8-32 NC-2 x 3/8 in. long	2
			_____☆_____	
-21	SP-97	.	Heater - Overload relay (Allen-Bradley Co., Milwaukee 4, Wisconsin) .	1
-22	SP-95	.	Plate - Switch cover (Appleton Electric Co., Chicago, Ill.)	1
		.	ATTACHING PART	
-23	XMC-5CP	.	Screw - Mach, oval hd, cadmium plated, 8-32 x 3/8 in. long	2
			_____☆_____	
-24	SP-99	.	Cord - No. 12 AWG, two-conductor, rubber covered, type SJ cable, 25 feet long	1

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			BOICE-CRANE NO. 2325 AND NO. 2326 COMBINATION CONTOUR SAW & BAND FILERS	
2-25	SP-100	.	Plug - Two wire, 20 amp, armored twist lock plug cap (Harvey Hubbell Inc., Bridgeport, Conn.)	1
-26	2314	.	Kit - File guide, 1/4 in. wide files (See figure 13 for breakdown)	1
-27	2351	.	File - Band, half round, 99 in. long, 1/4 in. wide.	1
-28	2313	.	Welder - Band saw automatic electric. 110 volts. 60-cycle	1
-29	SP-101	.	Snips - Blade cutting, 8 in. (Crescent Tool Co., Jamestown, N.Y.)	1
-30	2502	.	Guide - Miter, complete (See figure 14 for breakdown)	1
-31	2307	.	Screw Feed Device - Complete (See figure 15 for breakdown)	1
-32	115	.	Lamp Attachment - Complete, swivel arm with fastening screw included (Vimco Mfg. Co., Buffalo 13, N.Y.)	1
	2350	.	File - Band, flat, 99 in. long, 1/4 in. wide.	1
	2384-24P	.	Blade - Metal cutting, band saw steel, 1/8 in. wide, .020-.024 ga., 24-pitch	1
	2384-18P	.	Blade - Metal cutting, band saw steel, 1/8 in. wide, .020-.024 ga., 18-pitch	1
	2384-14P	.	Blade - Metal cutting, band saw steel, 1/8 in. wide, .020-.024 ga., 14-pitch	1
	2386-24P	.	Blade - Metal cutting, band saw steel, 1/4 in. wide, .020-.024 ga., 24-pitch	1
	2386-18P	.	Blade - Metal cutting, band saw steel, 1/4 in. wide, .020-.024 ga., 18-pitch	1
	2386-14P	.	Blade - Metal cutting, band saw steel, 1/4 in. wide, .020-.024 ga., 14-pitch	1
	2387-24P	.	Blade - Metal cutting, band saw steel, 3/8 in. wide, .020-.024 ga., 24-pitch	1
	2387-18P	.	Blade - Metal cutting, band saw steel, 3/8 in. wide, .020-.024 ga., 18-pitch	1
	2387-14P	.	Blade - Metal cuttings band saw steel, 3/8 in. wide, .020-.024 ga., 14-pitch	1
	2388-24P	.	Blade - Metal cutting, band saw steel, 1/2 in. wide, .020-.024 ga., 24-pitch	1
	2388-18P	.	Blade - Metal cutting, band saw steel, 1/2 in. wide, .020-.024 ga., 18-pitch	1
	2388-14P	.	Blade - Metal cutting, band saw steel, 1/2 in. wide, .020-.024 ga., 14-pitch	1
			BAND SAW ASSEMBLY - BENCH MODEL	
3-	2300		Saw Assembly - Band, bench model, 14 in. (See figure 2-1 for next higher assembly)	Ref
-1	2300-1SA	.	Frame and Door Assy - (See figure 5 for breakdown).	1
-2	2300-65SA	.	Wheel Unit - Lower	1
		.	ATTACHING PART	
-3	XHC-207	.	Screw - Heedless set, hex socket, cup points 5/16-18 NC-2 x 1/2 in. long	2
-4	SP-66	.	Key - Squares 1/4 x 1/4 x 1-3/4 in. long	1
-5	2305	.	Tire - Band saw wheel	1
-6	2300-42SA	.	Wheel and Slide Assy - Upper (See figure 4 for breakdown)	1
-7	2300-55SA	.	Screw Assy - Blade tracking	1
-8	XNW-2.50	.	Nut - Wing, cadmium plated, 5/16-24 NF	1
-9	2508	.	Handwheel - Complete, including setscrew	1
-10	2300-52	.	Screw - Blade tensioning	1
-11	XNJ-300	.	Nut - Jam, plain hex, steel, 3/8-1 NC-2	2
-12	XWH-11l5	.	Washer - Plain, hot-rolled steel, natural finish, 13/32 ID x 13/16 in. OD x 16 ga	2

SECTION VI
Group Assembly Parts List

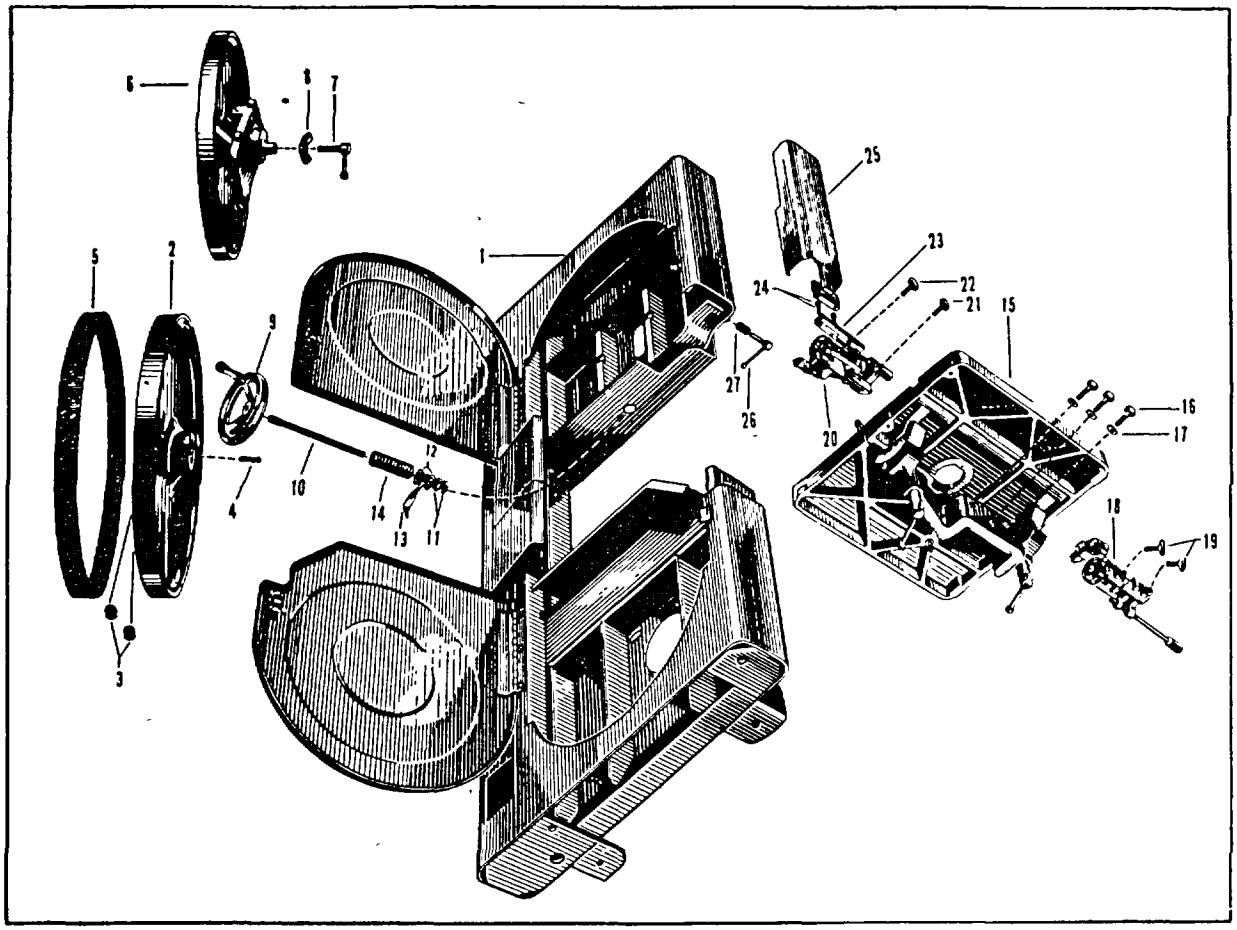


Figure 3. Band Saw Assembly - Bench Model

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			BAND SAW ASSEMBLY - BENCH MODEL (cont)	
3-13	2300-53	.	Pointer - Blade tensioning	1
-14	2300-54	.	Spring - Blade tensioning	1
-15	2300-69SA	.	Table Assy (See figure 6 for breakdown)	1
		.	ATTACHING PARTS	
-16	XCH-214	.	Bolt - Hex hd, steel, 5/16-18 NC-2 x 1-1/4 in. long	3
-17	XWH-913	.	Washer - Plain, cold-rolled steel, natural finish, 11/32 ID x 11/16 in. OD x 16 ga	3
			☆	
-18	2300-78SA	.	Guide Assy - Blade, lower (See figure 7 for breakdown)	1
		.	ATTACHING PART	
-19	XTS-112	.	Screw - Thumb, steel, 1/4-20 NC x 1 in. long	2
			☆	
-20	2300-92SA	.	Guide Assy - Blade, upper (See figure 8 for breakdown)	1
		.	ATTACHING PARTS	
-21	XTS-112	.	Screw - Thumb, 1/4-20 NC x 1 in. long	1
-22	XTS-110	.	Screw - Thumb, 1/4-20 NC x 3/4 in. long	1
			☆	

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			BAND SAW ASSEMBLY - BENCH MODEL (cont)	
3-23	2300-99	.	Bar - Mounting, upper guide	1
		.	ATTACHING PART	
-24	XCS-115	.	Screw - Cap, socket hd, steel, 1/4-20 NC x 1-1/2 in. long	2
			☆	
-25	2300-57SA	.	Guard Weldment - Telescoping	1
-26	2300-63SA	.	Screw Assy - Lock, telescoping guard	1
-27	2300-62	.	Spring - Friction, telescoping guard	1

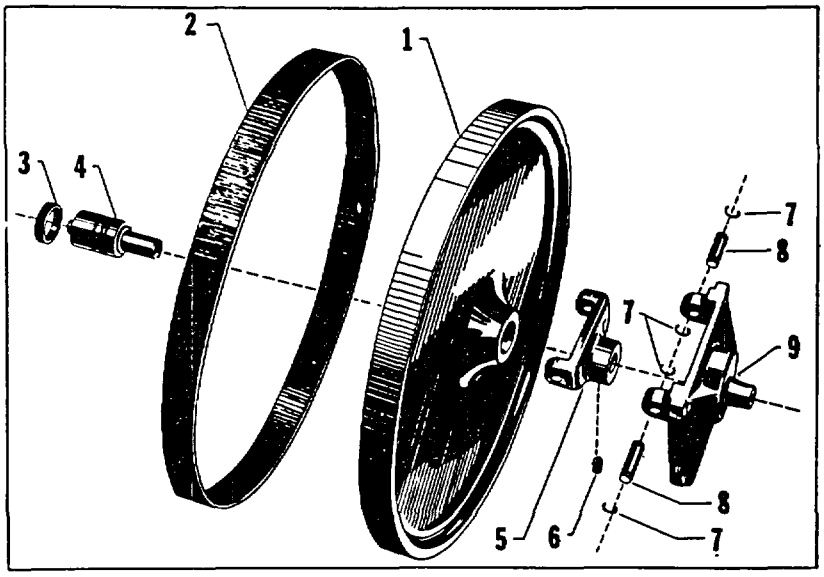


Figure 4. Wheel and Slide Assembly - Upper

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			WHEEL AND SLIDE ASSEMBLY - UPPER	
4-	2300-42SA		Wheel and Slide Assembly - Upper (See figure 3-6 for next higher assy)	Ref
-1	2300-49	.	Wheel - Machined upper	1
-2	2305	.	Tire - Rubber, band saw wheel	1
-3	2300-46	.	Ring - Bearing retaining	1
-4	2300-47	.	Bearing - Ball, upper wheel (altered from New Departure Mfg. Co. part No. 885154)	1
-5	2300-45	.	Clapperbox - Upper wheel.	1
-6	XHC-209	.	Screw - Headless set, hex socket, cup point, 5/16-18 NC-2 x 5/8 in. long	1
-7	XSO-219	.	Ring - Pivot pin retaining (National Lock Washer Co., Newark 5, N. J.)	4
-8	2300-44	.	Pin - Pivot	2
-9	2300-43	.	Plate - Slide, upper wheel.	1

SECTION VI
Group Assembly Parts List

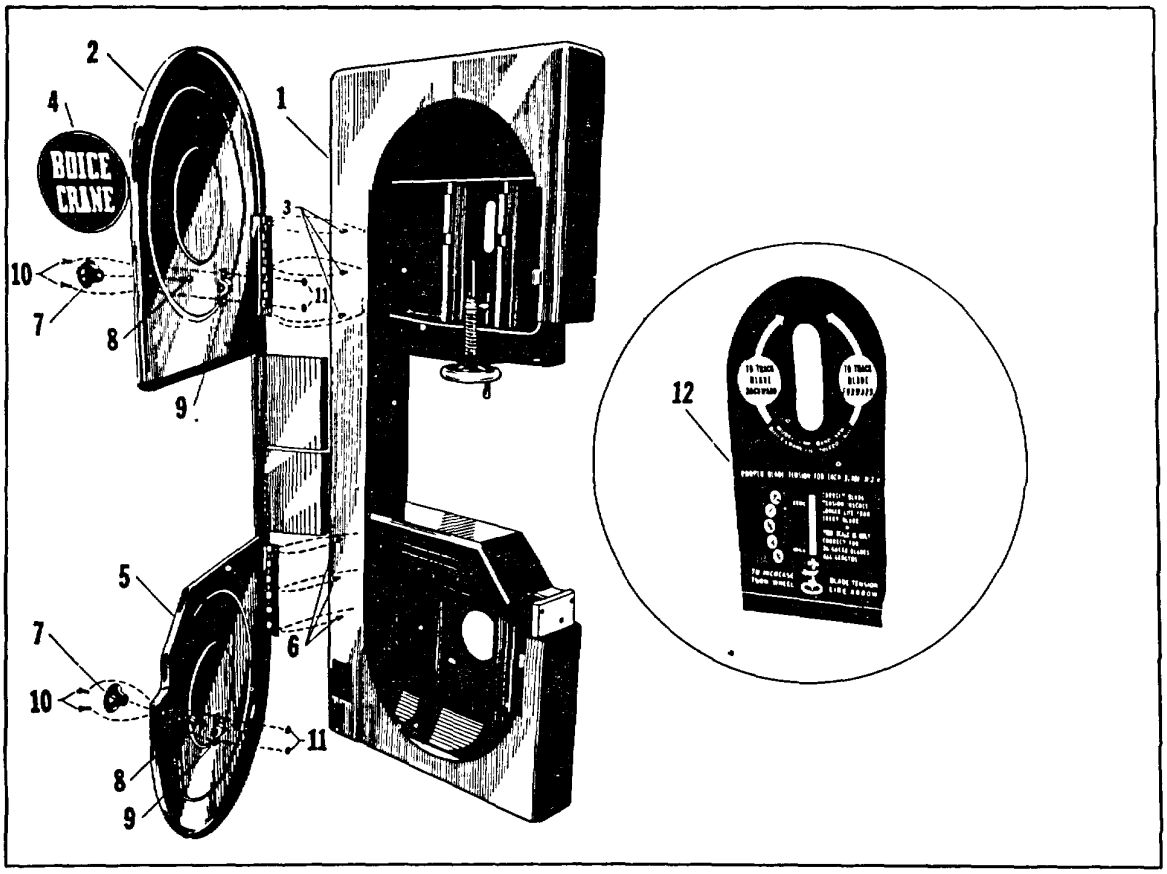


Figure 5. Frame and Door Assembly

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		FRAME AND DOOR ASSEMBLY	
5-	2300-1SA	Frame and Door Assy (See figure 3-1 for next higher assy)	Ref
-1	2300-2SA	. Frame Weldment - Machine	1
-2	2300-28SA	. Door Weldment - Upper wheel enclosure	1
		. ATTACHING PART	
-3	XMR-55	. Screw - Mach, rd lid, steel, 10-24 NC-2 x 3/8 in. long	3
		☆	
-4	SP-32	. Decalcomania - Trade name, six in. dia.	1
-5	2300-37SA	. Door Weldment - Lower wheel enclosure	1
		ATTACHING PART	
-6	XMR-55	. Screw - Mach, rd hd, steel, 10-24 NC-2 x 3/8 in. long	3
		☆	
-7	2300-36	. Knob - Door pull (Kurz-Kasch Co., Dayton 1, Ohio)	2
		. ATTACHING PART	
-8	XMR-57	. Screw - Mach, rd hd, steel, 10-24 NC-2 x 1/2 in. long	2
		☆	
-9	2300-33SA	. Catch Weldment - Door	2
		. ATTACHING PARTS	
-10	XMR-55	. Screw - Mach, rd hd, steel, 10-24 NC-2 x 3/8 in. long	4
-11	XNM-50	. Nut - Light hex, steel, 10-24 NC-2	4
		☆	
-12	2300-40	. Decalcomania - Blade tensioning and tracking instruction	1

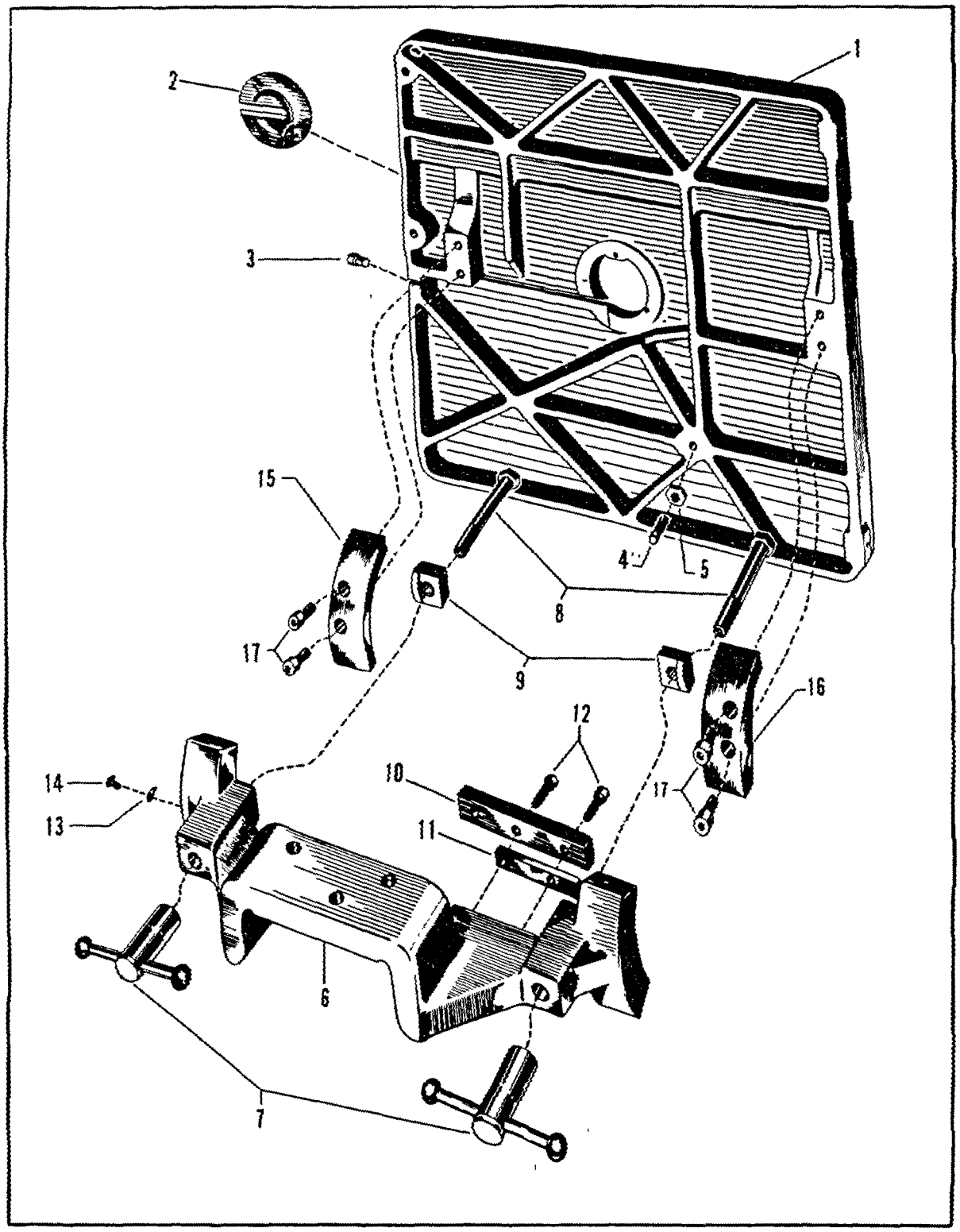


Figure 6. Table Assembly

SECTION VI
Group Assembly Parts List

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		TABLE ASSEMBLY	
6-	2300-69SA	Table Assembly (See figure 3-15 for next higher assy).	Ref
-1	2300-70	. Table - Band saw	1
-2	2300-91	. Insert - Blade type table opening, removable	1
-3	2300-90	. Pin - Dowel, table slot	1
-4	XCS-215	. Screw - Cap, Socket head. 5/16 - 18 NC. - 2 x 1-1/2 in. lg.	1
-5	XNJ-200	. Nut - Jam, plain hex, steel, 5/16-18 NC-2	1
-6	2300-74	. Trunnion	1
-7	2300-75SA	. Nut Assembly - Lock, trunnion to table are	2
-8	XCH-425	. Bolt - Hex hd, steel, 7/16-14 NC-2 x 4 in. long	2
-9	2300-73	. Shoe - Clap	2
-10	2300-88	. Bar - Mounting, lower guide	1
-11	2300-89	. Spacer - Lower guide mounting bar	1
		. ATTACHING PART	
-12	XCS-110	. Screw - Cap, socket hd, steel, 1/4-20 NC x 3/4 in. long	2
-13	2500-54	. Pointer - Table tilt degree	1
		. ATTACHING PART	
-14	XMH-57	. Screw - Mach, rd hd, steel, 10-24 NC-2 x 1/2 in. long	1
-15	2300-71	. Arc - Table, front (has degree scale)	1
-16	2300-72	. Arc - Table, rear	1
		. ATTACHING PART	
-17	XCS-210	. Screw - Cap, socket hd, steel, 5/16-18 NC x 3/4 in. long	4

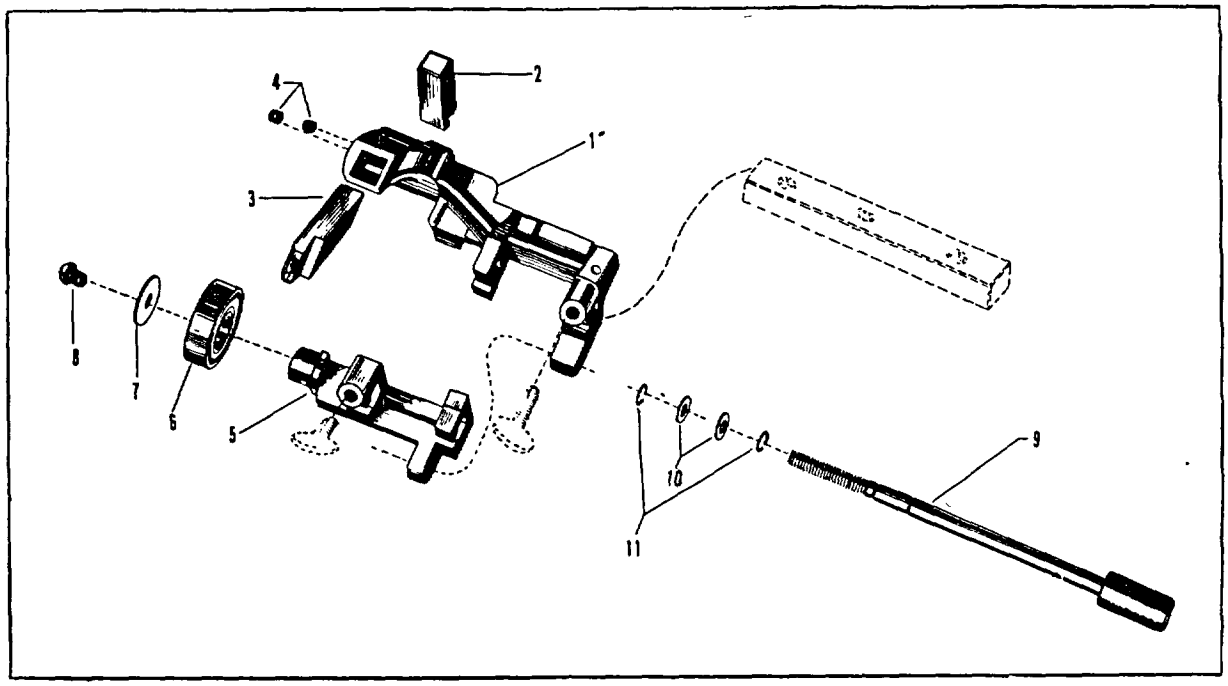


Figure 7. Blade Guide Assembly - Lower

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		BLADE GUIDE ASSEMBLY - LOWER	
7-	2300-78SA	Guide Assembly - Blade, lower, complete (See figure 3-18 for next higher assy)	Ref
-1	2300-80	. Holder - Jaw, lower guide	1
-2	2300-81	. Jaw - Square end	1
-3	2300-82	. Jaw - Beveled end	1
-4	XHC-103	. Screw - Headless set, hex socket, cup point, 1/4-20 NC-2 x 1/4 in. long	2
-5	2300-84	. Holder - Roller, lower guide	1
-6	BR-77503	. Roller - Blade thrust, ball bearing (New Departure Mfg. Co., Bristol, Conn.)	1
-7	XWD-616	. Washer - Plain, steel, cadmium plated, 1/4 ID x 7/8 in. OD x 16 ga	1
-8	XMR-103	. Screw - Mach, rd hd, steel, 1/4-20 NC-2 x 1/4 in: long	1
-9	2300-85SA	. Screw Assembly - Lower guide feed	1
-10	XWD-806	. Washer - Plain, steel, cadmium plated, 5/16 ID x 1/2 in. OD x 18 ga.	2
-11	XSO-217	. Ring - Retaining, thrust washer (National Lock Washer Co., Newark 5, N. J.)	2

SECTION VI
Group Assembly Parts List

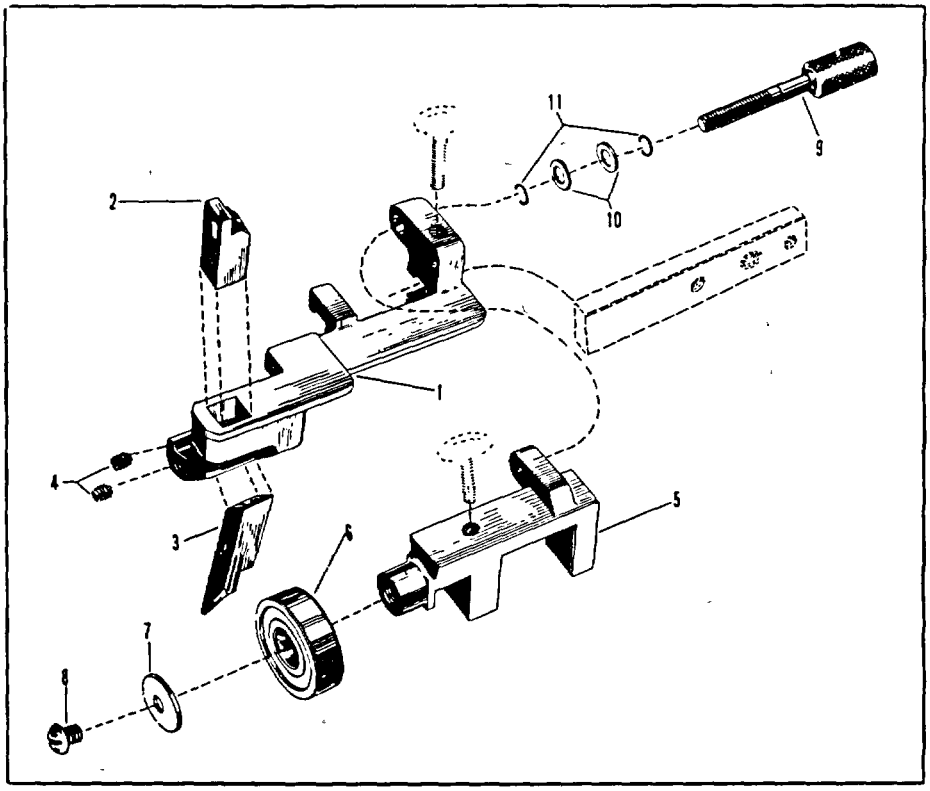


Figure 8. Blade Guide Assembly - Upper

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		BLADE GUIDE ASSEMBLY - UPPER	
8-	2300-92SA	Guide Assembly - Blade, upper,-complete (See figure 3-20 for next higher assy)	Ref
-1	2300-94	. Holder - Jaw, upper guide	1
-2	2300-81	. Jaw - Square end	1
-3	2300-82	. Jaw - Beveled end	1
-4	XHC-103	. Screw - Headless set, hex socket, cup point, 1/4-20 NC-2 x 1/4 in. long	2
-5	2300-96	. Holder - Roller, upper guide	1
-6	BR-77503	. Roller - Blade thrust, ball bearing (New Departure Mfg. Co., Bristol, Conn.)	1
-7	XWD-616	. Washer - Plain, steel, cadmium plated, 1/4 ID x 7/8 in. OD x 16 ga	1
-8	XMR-103	. Screw - Mach, rd hd, steel, 1/4-20 NC-2 x 1/4 in. long	1
-9	2300-97SA	. Screw Assembly - Upper guide feed	1
-10	XWD-806	. Washer - Plain, steel, cadmium plated, 5/16 ID x 1/2 in. OD x 18 ga	2
-11	XSO-217	. Ring - Retaining, thrust washer (National Lock Washer Co., Newark 5, N. J.)	2

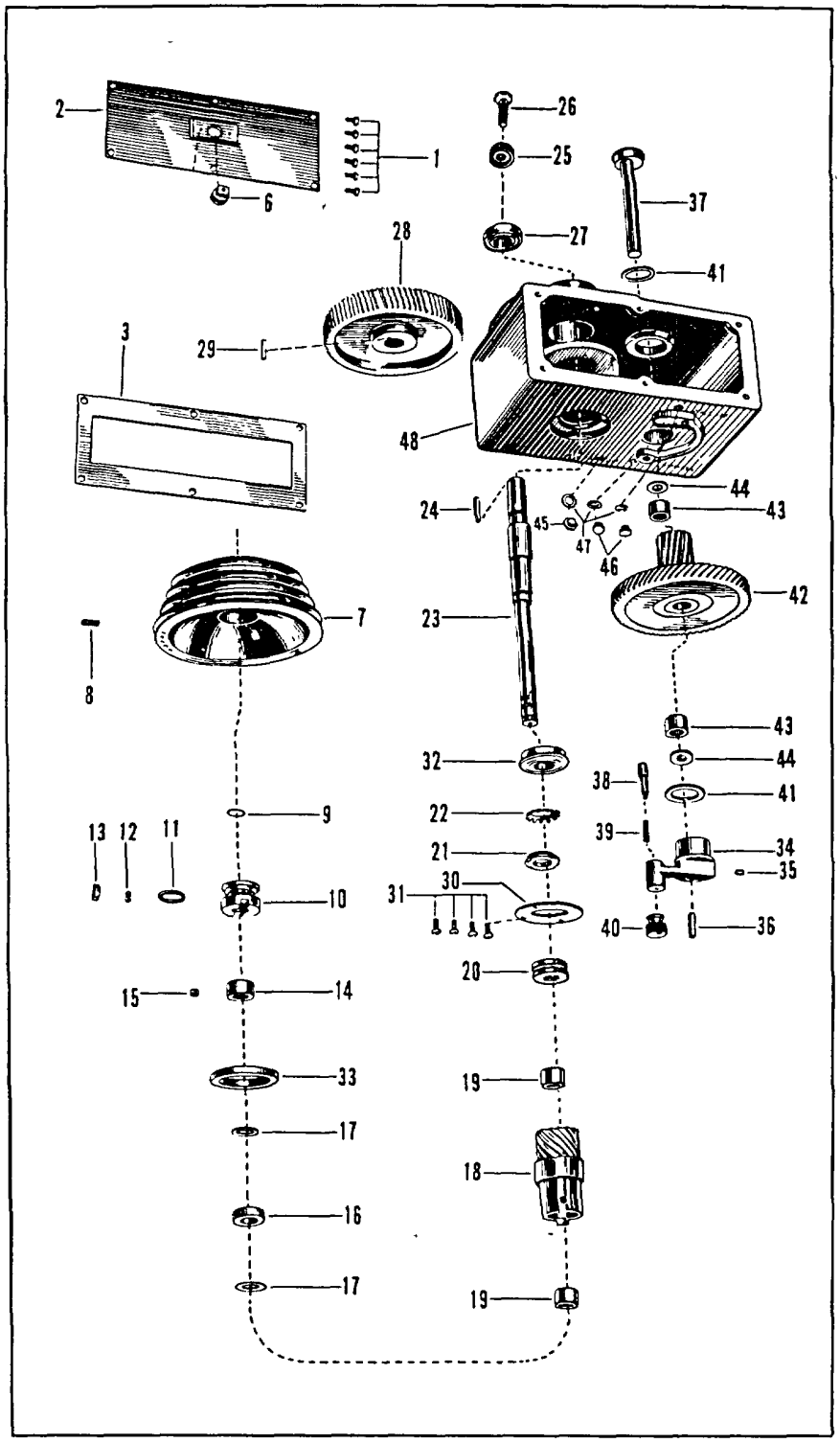


Figure 9. Transmission Assembly - Band Saw, Eight-Speed

SECTION VI
Group Assembly Parts List

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		TRANSMISSION ASSEMBLY - BAND SAW, EIGHT-SPEED	
9-	2:108-1SA	Transmission Assembly - Band saw, eight-speed (See figure 2-7 for next higher assy)	Ref
-2	2308-34SA	. . Plate Weldment - Cover	1
		. ATTACHING PART	
-1	XMR-105	. Bolt - Hex hd, steel, 1/4-20 NC-2 x 3/8 in. long	
		_____☆_____	
-3	2308-28	. . Gasket - Plate, gear case cover	6
-6	2308-15	. . Plug - Cover plate filler	1
-7	2308-13	. Pulley - Drive, 4-step	1
		. ATTACHING PART	
-8	XHC-210	. Screw - Headless set, hex socket, cup point, 5/16-18 NC-2 x 3/4 In. long	1
		_____☆_____	
-9	XSC-130	. Ring - Snap, main shaft retaining (National Lock Washer Co., Newark, N. J.)	1
-10	2308-14	. Clutch - Sliding	1
-11	2308-16	. Spring - Clutch positioning ball retaining garter	1
-12	SP-188	. Ball - Steel, 3/16 in. dia.	2
-13	2:108-17	. Key - Woodruff, Am. Std. No. 606, 3/16 x 3/4 in	1
-14	2308-11	. Collar - Thrust, pinion assembly	1
		. ATTACHING PART	
-15	XHC-203	. Screw - Headless set, hex socket, cup point, 5/16-18 NC-2 x 1/4 in. long	1
		_____☆_____	
-16	2308-10	. Seal - Oil (Garlock Packing Co., Palmyra, N. Y.)	1
-17	2308-9	. Washer - Seal thrust, fiber	2
-18	2308-6SA	. Pinion Assembly - Drive pulley	1
-19	BR-131212	. Bearing - Needle (The Torrington Co.,Torrington, Conn.)	2
-20	BR-W-3-4	. Bearing - Ball, thrust (Norma-Hoffman Bearing Corp., Stamford, Conn.)	1
-21	2600-70	. Nut - Lock, main shaft bearing	1
-22	W-US	. Washer - Lock, main shaft bearing (New Departure Mfg. Co., Bristol, Conn.)	1
-23	2308-3	. Shaft - Main	1
-24	SP-66	. Key - Square, 1/4 x 1/4 x 1-3/4 in. long	1
-25	2308-32	. Washer - Retaining, lower wheel cupped	1
		. ATTACHING PART	
-26	XCH-210	. Bolt r Hex hd, steel, 5/16-18 NC-2 x 3/4 in. long	1
		_____☆_____	
-27	BR88505	. Bearing - Ball, main shaft wheel end (New Departure Mfg. Co., Bristol, Conn.)	1
-28	2308-4	· Gear - Main shaft	1
-29	SP-38	. Key - Main shaft gears 3/16 x 3/16 x 3/4 in. long	1
-30	2308-5	. Washer - Retaining, ball bearing	1
		. ATTACHING PART	
-31	XMR-109	0. Screw - Mach, rd hd, steel, 1/4-20 NC-2 x 5/8 in. long	4
		_____☆_____	
-32	BR-488505	. Bearing - Ball, main shaft pulley end (New Departure Mfg. Co., Bristol, Conn.)	1
-33	2308-12	. Seal - Oil (Chicago Rawhide Mfg. Co., Chicago, Ill.)	1
9-	2308-18SA	. Eccentric Assembly - Back gear shaft	1
-34	*2308-21	. . Crank - Back gear eccentric	NP
		. . ATTACHING PART	
-35	XHC-205	. . Screw - Headless set, hex socket, cup point, 5/16-18 NC-2 x 3/8 in. long	1
-36	SP-38	. . Key - Crank eccentric to shaft, 3/16 x 3/16 x 3/4 in. long	1

☆Non procurable as a separate part.

Figure & Index No.	Part Number	1 2 3 4 5 6 7	Nomenclature	Units per Assy
			TRANSMISSION ASSEMBLY - BAND-SAW, EIGHT-SPEED (cont)	
9-37	☆ 2308-33SA	. .	Shaft Assembly - Back gear	NP
-38	2308-27	.	Plunger - Positioning, crank eccentric	1
-39	G-1509	.	Spring - Plunger, crank eccentric	1
-40	2500-70	.	Knob - Plunger, crank eccentric	1
-41	2308-22	.	Gasket - Back gear eccentrics to case	2
-4'2	2308-23SA	.	Gear Assembly - Back	1
-43	BR B1212	.	Bearing -Needle (The Torrington Co., Torrington, Conn.)	2
-44	2308-9	.	Washer - Spacing	2
-45	2308-30	.	Plug - Gear case drain hole	1
-46	2308-30	.	Plug - Gear case oil level hole	2
-47	2308-31	.	Gaskets - Gear case plug	3
-48	2308-2	.	Case - Transmission gear	1

☆Non procurable as a separate part.

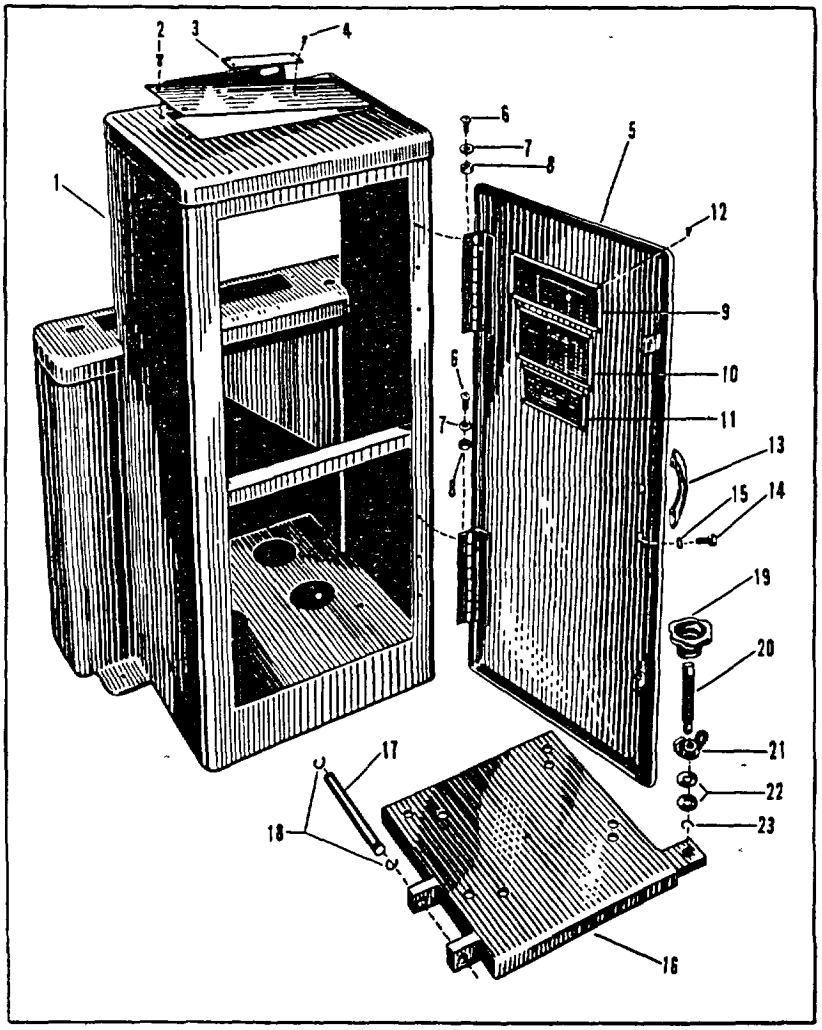


Figure 10. Floor Stand Assembly

SECTION VI
Group Assembly Parts List

Figure & Index No.	Part Number	Nomenclature 1 2 3 4 5 6 7	Units per Assy
		FLOOR STAND ASSEMBLY	
10-	2301-1SA	Stand Assembly - Floor (See figure 2-10 for next higher assembly)	Ref
-1	2301-2SA	. Stand Weldment - Floor, complete	1
☆ Note:		Fig. 10, items 2, 3, 4 illustrates special construction to military specifications. Listed below are the comparable commercial design items.	
-2	2301-31	. Cover - Motor compartment hand access hole	1
-3	XMR-104	. Screw - Mach, rd hd, steel, 1/4-20 NC-2 x 5/16 in. long	4
-4	XWE-100	. Washer - Lock, ext teeth, steel, 1/4 in. screw size.	4
-5	2301-26SA	. Door Weldment - Motor compartment	1
		. ATTACHING PARTS	
-6	XMR-57	. Screw -Mach, rd hd, steel, 10-24 NC-2 x 1/2 in. long	6
-7	XWE-50	· Washer - Lock, ext teeth, steel, No. 10 screw size	6
-8	XNM-50	· Nut - Light hex, steel, 10-24 NC-2	6
		☆	
-9	2308-38	. Plate - Instruction, speed change	1
-10	2324-25	. Plate - Instruction, recommended wheel speed	1
		. ATTACHING PART	
-12	XDS-2	. Screw - Drive, rd hd, Parker-Kalon, type U, No. 2 x 1/8 in. long	8
		☆	
-13	2301-29	. Handle - Door (American Cabinet Hardware Co., Rockford, Ill.)	1
		. ATTACHING PARTS	
-14	XMR-5	. Screw - Mach, rd hd, steel, 8-32 NC-2 x 3/8 in. long	2
-15	XWE-0	. Washer - Lock, ext teeth, steel-, No. 8 screw size.	2
		☆	
-16	2309-2SA	. Plate Weldment - Hinged motor mounting	1
		. ATTACHING PARTS	
-17	2309-7	· Pin - Hinge, motor plate	1
-18	XS0-223	. Ring - Snap, hinge pin retainer (National Lock Washer Co., Newark 5, N. J.)	2
		☆	
-19	SP-8SA	. Wheel - Star, including setscrew	1
-20	2309-6	. Screw - Adjusting, motor plate	1
-21	XNW-500	. Nut - Wing, locking, steel, 1/2-13 NC thread	1
-22	XWH-1016	. Washer - Plain, hot-rolled steel, natural finish, 13/32 ID x 13/16 in. OD x 16 ga	2
-23	XS0-219	. Ring - Snap, washer retainer (National Lock Washer Co., Newark 5, N. J.)	1
24-	2309-10	. Washer - Rubber,-anti-rattle	2

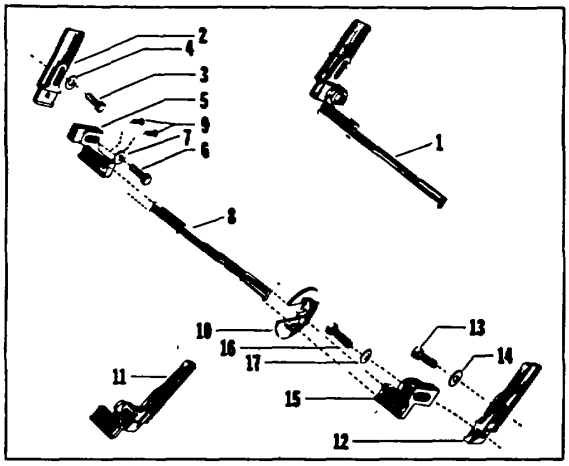


Figure 13. File Guide Kit Complete for 1/4-inch Wide Band Files

Figure & Index No.	Part Number		Nomenclature 1 2 3 4 5 6 7	Units per Assy
			FILE GUIDE KIT COMPLETE FOR 1/4 INCH WIDE BAND FILES	
13-	2314	Kit	- File guide, complete, for 1/4 in. wide files (See figure 2-26 for next higher assembly)	Ref
-1	2314-1SA	.	Guide Assembly - File, upper	1
-2	2315-4	. .	Bracket - Holder, upper	1
		. .	ATTACHING PARTS	
-3	XCH-210CP	. .	Bolt - Hex hd, steel, 5/16-18 NC-2 x 3/4 in. long	1
-4	XWD-913	. .	Washer - Cadmium plated, steel, 11/32 ID x 11/16 in. OD x 16 ga	1
-5	2314-3	. .	Holder - Guideway, upper, 1/4 in	I
		. .	ATTACHING PARTS	
-6	XCH-212CP	. .	Bolt - Hex hd, steel, 5/16-18 NC-2 x 1/2 in. long	1
-7	XWD-913	. .	Washer - Cadmium plated, steel, 11/32 ID x 11/16 in. OD x 16 ga.	1
-8	2314-2	. .	Guideway - Band file, 1/4 in	1
		. .	ATTACHING PART	
-9	XCS-59	. .	Screw - Cap, socket hd, steel, 10-24 NC x 5/8 in. long	2
-10	2315-5	.	Insert - Table, for band files	1
-11	2314-6SA	.	Guide Assembly - File, lower	1
-12	2315-4	. .	Bracket - Holder, lower	1
		. .	ATTACHING PARTS	
-13	XCH-210CP	. .	Bolt - Hex hd, steel, 5/16-18 NC-2 x 3/4 in. long	1
-14	XWD-91	. .	Washer - Cadmium plated, steel, 11/32 ID x 11/16 in. OD x 16 ga.	1
-15	2314-7	. .	Holder - Guideway, lower, 1/4 in	1
		. .	ATTACHING PARTS	
-16	XCH-212CP	. .	Bolt - Hex hd, steel, 5/16-18 NC-2 x 1 in. long	1
-17	XWD-91:1	. .	Washer - Cadmium plated, steel, 11/32 ID x 11/16 in. OD x 16 ga.	1

APPENDIX
BASIC ISSUE ITEMS LIST

AND
ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

1. Scope
This appendix lists basic issue items and items troop installed or authorized required by the crew/operator for operation of the Metal Cutting Band Saw.

2. General
This Basic Issue Items List and Items Troop Installed or Authorized List is divided into the following sections:

a. Basic Issue Items List. Not applicable.

b. Items Troop Installed or Authorized List. Not applicable.

3. Explanation of Columns
The following provides an explanation of columns found in the tabular listings:

a. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

b. Description. Indicates the Federal item name and a minimum description required to identify the item. The last line indicates the reference number followed by the applicable Federal Supply Code for Manufacturer (FSCM) in parentheses. The FSCM is used as an element in item identification to designed manufacturer or distributor or Government agency, etc., and is identified in SB 708-42. Items that are included in kits and sets and listed below the name of the kit or, set with quantity of each item in the kit or set indicated in front of the item name.

c. Unit of Measure (U/M). Indicates the standard or basic quantity by which the listed item is used in performing the actual maintenance function. This measure is expressed by a two character alphabetical abbreviation, e.g., ea, in., pr, etc., and is the basis used to indicate quantities. When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

d. Quantity Furnished with Equipment (Basic Issue Items Only). Indicates the quantity of the item furnished with the equipment.

e. Quantity Authorized (Items Troop Installed or Authorized Only). Indicates the quantity authorized to be used with the equipment.

f. Illustration (Basic Issue Items Only). This column is divided as follows:

(1) *Figure Number.* Indicates the figure number of the illustration in which the item is shown.

(2) *Item Number*. Indicates the item number used to identify each item called out in the illustration.

4. Abbreviations

Abbreviation	*Explanation*
bev	bevel
circ	circumference
flex.	flexible
ga	gage
half-rd	half round
sec	section
w	wide

5. Errors, Comments, and/or Suggestions

Reports by the individual user, of errors, comments, and suggestions are encouraged. They should be reported on DA Form 2028 (Recommended Changes to DA Publications) and forwarded directly to Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-SMM-P, Rock Island Arsenal, Rock Island, Ill. 61202.

Section II. BASIC ISSUE ITEMS

(1) Source. maintenance, and recoverability code				(2)	(3)	(4)	(5)	(6) Illustration	
(a) Material code	(b) Source	(e) Maintenance level	(d) Recoverability	Federal stock No	Description	Unit of issue	Quality authorized	(a) Figure No.	(b) Item No.
					MAJOR COMBINATION				
					The following item is to be requisitioned for initial issue only.				
			R	3419-222-1330	SAW, BAND, METAL CUTTING: (07866:2325) ----	ea	-------	14	
					COMPONENTS OF MAJOR COMBINATION				
					None authorized.				
					REPAIR PARTS				
					None authorized.				
					TOOLS				
					None authorized.				
					EQUIPMENT FOR:				
					SAW, BAND, METAL CUTTING: (07866:2325)				
	C	O/C			BELT, V: A-sec, 60 in. outside circ (07866:1060)----	ea	1	14	12
	C	O/C			BLADE, BAND SAW: 1/8 in. w x 98 in. lg, 0.020-0.024 ga, 14-pitch (07866:2384-14P) For fabricating replacement, use:	ea	3	14	9
	C	O/C	.....	3455-277-3542	BLADE, BAND SAW: flex. back, raker set, 1/8 w, 0.025 in. thk, 14 teeth per in., 100 ft coils (2773542).	ea			
	C	O/C			BLADE, BAND SAW: 1/8 in. w x 98 in lg, 0.020-0.024 ga, 18-pitch (07866:2384-18P) For fabricating replacement, use:	ea	2	14	8
	C	O/C	.....	3455-224-3591	BLADE, BAND SAW: flex. back, raker set, 1/8 w, 0.025 in. thk, 18 teeth per in., 100 ft coils (2243591).	ea			
	C	O/C			BLADE, BAND SAW: 1/8 in. w x 98 in. lg, 0 020-0.024 ga, 24-pitch (07866:2384-24P) For fabricating replacement, use:	ea	1	14	7
	C	O/C	.....	3455-277-3543	BLADE, BAND SAW: flex. back, raker set 1/8 in. w, 0.025 in. thk, 24 teeth per in, 100 ft coils (2773543).	ea			

Section II. BASIC ISSUE ITEMS

(1) Source. maintenance, and recoverability code				(2)	(3)	(4)	(5)	(6) Illustration	
(a) Material code	(b) Source	(e) Maintenance level	(d) Recoverability	Federal stock No	Description	Unit of issue	Quality authorized	(a) Figure No.	(b) Item No.
	C	O/C	.....		BLADE, BAND SAW: 1/4 in. w x 98 in. lg, 0.020-0.024 ga, 14-pitch (07866:2386-14P) For fabricating replacement, use:	ea	3	14	19
	C	O/C	.....	3455-244-3592	BLADE, BAND SAW: flex. back, raker set, 1/4 in. w, 0 025 in. thk, 14 teeth per in., 100 ft coils (2443592).	ea			
	C	O/C	.....		BLADE, BAND SAW: 1/4 in. w x 98 in. lg, 0.020-0.024 ga, 18-pitch (07866:2386-18P) For fabricating replacement, use:	ea	2	14	18
	C	O/C	.....	3455-277-3549	BLADE, BAND SAW: flex. back, raker set, 1/4 in. w, 0 025 in. thk, 18 teeth per in., 100 ft coils (2773549).	ea			
	C	O/C	.....		BLADE, BAND SAW: 1/4 in. w x 98 in. lg, 0.020-0.024 ga, 24-pitch (07866:2386-24P) For fabricating replacement, use:	ea	1	14	17
	C	O/C	.....	3455-277-3550	BLADE, BAND SAW: flex. back, raker set, 1/4 in. w, 0 025 in. thk, 24 teeth per in., 100 ft coils (2773550).	ea			
	C	O/C	.....		BLADE, BAND SAW: 3/8 in. w x 98 in. lg, 0.020-0.024 ga, 14-pitch (07866:2387-14P) For fabricating replacement, use:	ea	3	14	3
	C	O/C	.....	3455-277-3553	BLADE, BAND SAW: flex. back, raker set, 3/8 in. w, 0.025 in. thk, 14 teeth per in., 100 ft coils (2773553).	ea			
	C	O/C	.....		BLADE, BAND SAW: 3/8 in. w x 98 in. lg, 0.020-0.024 ga, 18-pitch (07866:2387-18P) For fabricating replacement, use:	ea	2	14	2
	C	O/C	.....	3455-224-3595	BLADE, BAND SAW: flex. back, raker set, 3/8 in. w, 0.025 in. thk, 18 teeth per in., 100 ft coils (2243595).	ea			
	C	O/C	.....		BLADE, BAND SAW: 3/8 in. w x 98 in. lg, 0.020-0.024 ga, 24-pitch (07866:2387-24P) For fabricating replacement, use:	ea	1	14	1
	C	O/C	.....	3455-277-3554	BLADE, BAND SAW: flex. back, raker set, 3/8 in. w, 0 025 in. thk, 24 teeth per in., 100 ft coils (2773554).	ea			
	C	O/C	.....		BLADE, BAND SAW: 1/2 in. w x 98 in. lg, 0.020-0.024 ga, 14-pitch (07866:2388-14P) For fabricating replacement, use:	ea	3	14	6

(1) Source. maintenance, and recoverability code				(2)	(3)	(4)	(5)	(6) Illustration	
(a) Material code	(b) Source	(e) Maintenance level	(d) Recoverability	Federal stock No	Description	Unit of issue	Quality authorized	(a) Figure No.	(b) Item No.
	C	O/C	.....	3455-224-3596	BLADE, BAND SAW: flex. back, raker set, 1/2 in. w, 0 025 in. thk, 14 teeth per in., 100 ft coils (2243596).	ea			
	C	O/C	.....		BLADE, BAND SAW: 1/2 in. w x 98 in lg, 0.020-0.024 ga, 18-pitch (07866:2388-18P) For fabri-eating replacement, use:	ea	2	14	5
	C	O/C	.....	3455-277-3557	BLADE, BAND SAW: flex. back, raker set, 3 in. w, 0025 in. thk, 18 teeth per in., 100 ft coils (2773557).	ea			
	C	O/C	.....		BLADE, BAND SAW: 1/2 in. w x 98 in. lg, 0.020-0.024 ga, 24-pitch (07866:2388-24P) For fabri-cating replacement, use:	ea	1	14	4
	C	O/C	.....	3455-277-3558	BLADE, BAND SAW: flex. back, raker set, 1/2 in. w, 0.025 in. thk, 24 teeth per in., 100 ft coils (2773558).	ea			
	C	O/C	.....		FILE, BAND, fl, 1/4 in w x 99 in. lg (07866:2350)	ea	3	14	10
	C	O/C	.....		FILE, BAND: half-rd, 1/4 in. w x 99 in. lg (07866: 2351).	ea	3	14	11
	C	O/C	.....		GUIDE, MITER: (07866:2502)	ea	1	14	16
	C	O/C	.....		JAW, GUIDE: bev end (07866:2300-82)	ea	2	14	14
	C	O/C	.....		JAW, GUIDE: sq-end (07866.2300-81) -	ea	2	14	13
	C	O/C	.....		KIT, FILE GUIDE: for 1/4 in. w files (07866:2314)	ea	1	14	15

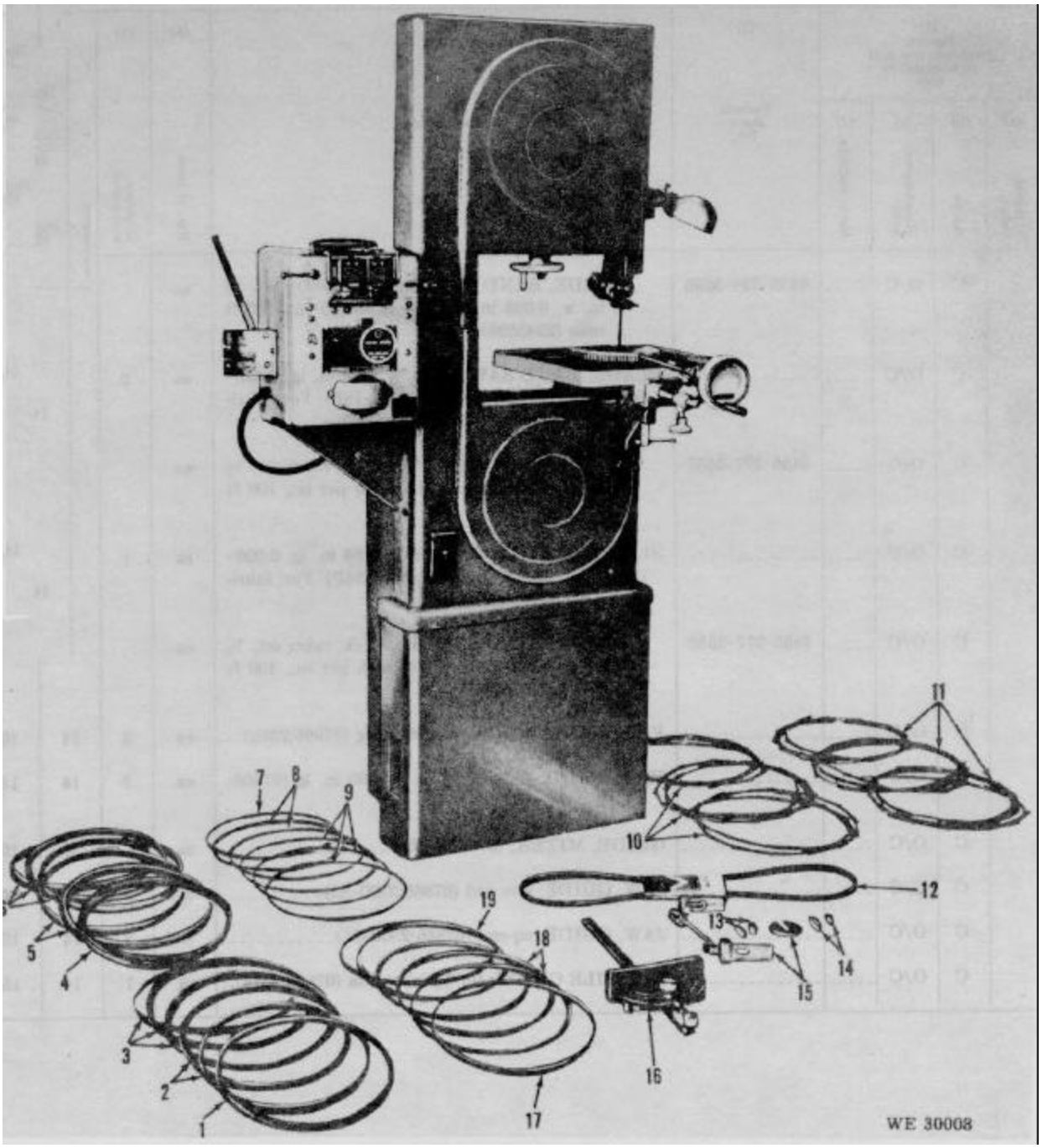


Figure 14. Equipment.

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NG: None.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

TM 9-3419-224-10 SAW, BANK, METAL CUTTING - 1965