INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Machine Serial Number: ________________
Date Shipped: ________

Band Saw Machine Tool  MODEL L-10 .003

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For Parts or Service
Telephone 269-279-5123
Fax 269-279-6337
E-Mail sales@wfwells.com
Web Page www.wfwells.com
I. INTRODUCTION
Efficient performance of any machine tool is the right combination of:
1. Machine, matched to the work load.
2. Tooling, matched to the work piece.
3. Operator, trained and conscientious.

W. F. Wells provides the machine tool. Consult a reliable blade supplier for the proper tooling, matched to the work piece.

Operators must not use this machine without first reading through the manuals in this binder. The time it takes is more than made up in man hours and machine downtime saved.

This manual, together with other manuals in this binder, explains installation, operation and maintenance of W. F. Wells Model L-10 band saw machine tool. The purpose is to thoroughly familiarize operators with proper procedures to get the best performance and dependability from the machine.

As soon as any machine arrives on the receiving dock, give it a thorough visual inspection to assure no damage occurred during transport. Normally, if the machine crating is in good condition, the machine is in good condition. If the shipping crate shows damage or signs of repair, note it on the waybill. Uncrate and inspect the machine while the driver is still at the dock, or refuse it.

II. INSTALLATION
Give careful consideration to the machine installation site.
The plant engineer must establish work flow to and from the machine.
The machine must be level and anchored for proper, efficient, trouble free operation.
The operator must have room to perform his job safely.
The work area must be uncluttered and well lighted. Maintain temperature in the machine area at a level to provide maximum operator comfort. If it is not, machine operators may compensate in clothing or move about, creating a condition of hazard.

A. Site Preparation.
See the contents page for the machine floor plan print, and optional equipment to install with the saw.
Establish machine location in relation to material handling work flow to the machine and related production functions.
Model L-10 does not require a special foundation. However, the floor under the machine must be solid and strong enough to support the machine weight with intended work load.

B. Machine Assembly.
This machine ships as a complete unit, ready to install.
Depending on accessories ordered with the machine, the only assembly required is adding the optional stock stop bar at the front of the saw bed and coolant pump and screens in the coolant reservoir.

1. See the contents page for the optional stock stop drawing.
Insert the stock stop bar, slot-end first, through the hole in the front of the bed to the hole in the back of the bed.

2. Align the slot in the end of the bar with the pin at the back of the machine bed.

3. As the bar engages the pin place the push arm into the notch on the saw head pivot arm as shown in the foldout drawing.

4. Attach the spring to the bracket on the base of the machine.

5. Coolant pump and screen assemble in the reservoir under the blade line.
C. Pre-operation Check-out.
Do not install a blade on this machine or operate this machine before completing the pre-operation check-out.

1. Check fluid levels and filters described in maintenance section IV A, page 7.

2. See maintenance section IV D, page 14, and connect electric service to the machine.

D. Leveling and Anchoring.
This machine must be level for precision sawing. Unauthorized moving or bumping the machine alters the setup causing inaccurate sawing, making releveling necessary.
See part "A," site preparation, for proper foundation.

1. Raise the saw head and open the vise jaws. Place an accurate machine level along the saw bed between the vise jaws. Bring the reading to level with shims under either end of the base.

2. Move the level to the stationary vise jaw and check for level front to back across the saw bed. Adjust shims front or back on both ends of the saw base for a level reading at both vise jaws.

3. Loosely assemble optional tables to the saw bed. See the contents page for optional equipment. Level the equipment to the saw bed.

4. With accessory equipment leveled to the saw bed and fasteners tightened, tighten anchor bolt nuts on the saw and accessories.

5. Build a dam around each anchor bolt and pour grout up to the base of the machine.

III. SAFETY and OPERATION
Few safety devices benefit the careless worker. Safety is an attitude either accepted or rejected by the operator.

A. Safety.
For the operator who abides by his local shop safety practices, add the following, applying to this equipment.

1. Lock or tag out the electric disconnect switch during routine maintenance.

2. Replace guards and safety devices removed during maintenance, before returning the machine to service.

3. A qualified assistant operator need not be at the controls of this machine when the regular operator is not. Authorize other workers in the area to shut down the machine with the Emergency Stop control in the event of conditions of hazard.

4. Do not allow casual climbing or leaning on the machine. Slippery coolant covered surfaces are not detected until too late to prevent the slip.

5. WARNING: Blade handling can do great bodily harm. Wear heavy protective gloves during blade change for positive control of the blade. Never wear gloves while operating this, or any other machine tool. Guard against all other body contact with the blade.

6. Always wear eye protection when operating this equipment.

7. After installing the blade, keep hands away from the blade.
B. Operator Controls

This machine is an easy to operate, manual saw. Basically, raise the saw head, clamp the work piece in the vise, start the blade and open the saw head lowering valve, allowing the blade to saw through the work. Operators must be familiar with the features of the machine in order to get the best performance and dependability from the machine.

1. Saw blade start control is press activated, starting the saw blade, and will not deactivate on release. The blade continues running until the saw head fully lowers, automatically shutting off the blade motor switch.

2. Saw blade stop control is press activated, stopping the blade drive motor.

3. Raise the saw head with the lift handle on the tension wheel cabinet. To keep the saw head raised, close the saw head lowering valve.

4. Control the saw head lowering rate with the valve handle. With the lowering valve fully open, the saw head/blade applies full force to the work piece. When sawing round or narrow work and only one or two teeth contact the top of the work piece, open the valve slightly, the blade slowly contacting the work piece. When the blade starts a kerf in the work, open the valve. Spring tension, control no. 5, takes over for more efficient sawing.

5. Sawing force control is spring tension on the balanced saw head. To adjust the sawing force raise the saw head to relieve spring tension. Turn the sawing force control handle in or out of the saw bed to control sawing force. The hand wheel turned all the way out to the end of the screw is the least tension on the saw head balance spring, the greatest sawing force.

6. Blade speed control is as important as sawing force. Running a blade too fast for the work piece burns the blade out prematurely. Increased surface speed of any cutting tool makes the cutting edge run hot. Blade metal temperature passes critical at a given point, the cutting edge softens and the tool fails. Most blade suppliers furnish a slip chart with recommendations for their blades. Page 10 of the Saw Blade Selection manual in this binder offers a guide. Blade speed control on this model is variable 60 to 325 surface feet per minute. To adjust blade speed, start the blade motor. Turn the hand crank on the variable speed pulley, back of the saw head, to a setting proper for the blade and the work piece.

7. Adjust the saw vise to the work piece. Place the work piece against the stationary
vise jaw. Unlock the movable vise jaw handle with the thumb lever under the handle.
Lift the handle and slide the movable jaw up against the work piece.
Replace the handle on the vise slide and lock it in place on the screw.
Final tightening is with the vise screw hand wheel at the end of the saw bed.
For angle sawing up to 45° loosen bolts in the base of the jaws. Set the stationary vise jaw to the angle required with a template or protractor. Tighten nuts in the base of the stationary jaw to hold it in place. Slide the movable jaw up against the stationary jaw, self-adjusting it to the same angle as the stationary jaw. Tighten nuts in the base of the movable jaw and check the angle with the protractor.
NOTE: Use caution for occasional sawing at 45° with standard vise jaws. The grip area of standard vise jaws at 45° is much less than at 90°. Angle vise jaws with full gripping area are available as optional equipment for more efficient angle sawing.

9. Optional stock stop bar measures each piece the same length before sawing without operator assistance.
To set the length, measure from the tooth set in the blade to the length stop and clamp the stop in position.
Measure the first cut length before continuing multiple piece sawing.
As the saw head/blade comes down through the work piece, the stock stop bar swings up out of the way allowing the cut piece to drop freely away.

C. Operating Sequence.
1. Close the lowering valve to hold the saw head in suspension.
Raise the saw head.
2. Open the vise jaws.
3. Place the work piece against the stationary vise jaw under the blade for the cut. Clamp the vise jaws against the work piece.
4. Tension the blade.
5. Adjust the sawing force.
6. Start the saw blade.
7. Adjust the blade speed.
8. Open the saw head lowering valve slightly to bring the blade into contact with the work piece slowly.
As the blade begins the kerf, open the valve for more sawing force.
9. The machine shuts off after the cut. If machine set up is for production sawing, check the first cut piece for correct length.

D. Trouble Shooting.
Common band sawing problems listed here give instructions for correcting the problem. Consider a problem carefully. Get at the underlying cause of a problem rather than remedy a series of side effects.
1. Scale on the work piece.
Hot-rolled steel has a degree of mill scale.
On low carbon steel the scale does not affect sawing rates, but the scale dulls the saw blade teeth.
Remove scale from the sawing area.

2. Hard surfaces.
Torch cutting and improper grinding some steel creates a case-hardened shell a few thousandths of an inch thick. Sawing through it dulls saw blade teeth.
Saw and change blades as they dull until the hardened area saws through is the only solution.

3. Crooked sawing.
If a new blade saws crooked, or begins to saw straight but after several cuts starts to saw crooked and results are worse with each cut, see the above paragraphs, the blade selection manual and the maintenance section on sawing force.

4. Broken blades.
Check to see if blades are breaking at the weld. Automatic blade welders get out of adjustment, or an inexperienced welder operator may improperly anneal the weld.
If this is not the problem, see the maintenance section on sawing force and blade wheel alignment.

5. Stripped teeth.
Improper sawing force and blade speed is the usual cause.
See the blade selection manual, and the maintenance section for a sawing force check.

6. Poor blade life.
Blade speed too fast for the work piece is the usual cause of poor blade life. See paragraphs 1 and 2.

7. Erratic saw head feed.
Uncontrollable saw head feed into the work piece can be:

8. Saw head stall.
If the blade comes to the work piece and starts the cut but seems to float without sawing, check the following malfunctions.

a. Make sure the blade is sharp, and the proper blade for the work piece.
Too much sawing force applied to a small tooth blade on a wide work piece fills saw tooth gullets before the blade clears the work piece to empty the gullets.
Chips locked in the tooth gullet, still in the blade kerf, force teeth tips up away from the cut, causing the blade to float through the kerf.
Change the blade to one with fewer teeth and larger gullets, or use less sawing force to form smaller chips, at the risk of heating the blade to the point of hardening the work piece.

b. Monitor the sawing force.
Use only 30 to 50 pounds of sawing force and use the proper blade for the work piece.

c. Look for dirt lodged in the blade guides. Keep the guides clean.
See the maintenance section for a blade guide inspection.

If the blade jams in the cut it is the wrong blade for the work piece, too much sawing force for the blade or blade tension is improper.
Correct the sawing practice.
Wait five minutes and press the motor starter reset control.
If the blade stalls with the motor running, shut the machine down. Free the blade from the kerf and tension the blade properly. Rotate the work piece a few degrees if possible so the blade will not hang up in the same kerf.

IV. MAINTENANCE
To assure smooth running machinery and save hours of downtime and repair costs follow inspection, adjustment, lubrication and maintenance outlined here.

A. Lubrication.
The lubrication chart in the back of this manual depends on shop conditions and machine use.

1. Fluid levels.
   Routinely check fluid levels. Lock or tag out the electric switch.

   a. Hydraulic fluid.
   Check the fluid level with the saw head lowered and the machine turned off. Fluid 1/2” from the top of the hydraulic cylinder, behind saw head, is proper level. Bring the fluid level up to the top with Mobil DTE 24 hydraulic oil. If the oil level falls below the top hose fittings in the cylinder, the cutting head action will become spongy and a considerable drop in the head will be noticed after the head is raised and released onto the hydraulic cylinder. If this happens, remove the cylinder cap and fill the cylinder. Replace the cylinder cap, leaving it loose. Raise and lower the saw head several times, closing the saw head lowering valve each time the head bottoms out. Fill the cylinder and repeat the process until all air works out of the cylinder and the oil level is 1/2” from the top of the cylinder.

   DO NOT oil or grease the drive wheel ring or pinion. Grease causes dirt and chips to cling and clog the gears. Keep the variable speed drive belt and pulley faces free of dirt and grease for longer service life.

   The motor pulley (908840) has been permanently lubricated and no additional lubrication is required. Cycling the drive through the entire speed range is not required.

   B. Coolant Fluids and Pump.
   Caution: During machine set up and trial running, unplug the coolant pump at the in-line disconnect in back of the machine, or fill the coolant reservoir. Coolant fluid is a heat sink for the pump and it must not operate unless submersed in coolant. Routinely clean the coolant reservoir and pump screens. A blocked screen stalls the pump. A damaged screen lets chips block or enter the pump chamber, ruining the pump in minutes.

   This machine has a 10 gallon coolant reservoir capacity. Consider coolant type and machine use before filling the reservoir. Some fluids deteriorate more rapidly than others. The work piece and the blade determine coolant/lubricant type. There are coolant fluids and there are cutting fluids. Faster blade speeds require efficient coolant to prevent saw blade over heating. Increased tool surface speed makes the cutting edge run hot. Without proper coolant blade metal temperature passes critical at a given point. Blade teeth soften and dull.

   1. Straight cutting oil.
   Slow blade speeds for hard metals and saw blades that remove a large chip require more coolant / lubricant. At these slow speeds high lubricity straight cutting oil is popular.

   Do not use straight cutting oil in this machine unless factory labels clearly show machine equipment includes oversize coolant pump, lines and nozzles.

   2. Water soluble oils.
   Water soluble oils offer good cooling as well as good lubrication.
Use one part oil to fifteen parts water for most steels. Use one-to-one water and soluble oil for tool steel sawing. This machine can use this fluid.

Synthetic oils, without chemical solution, are similar to water soluble oil capability and dependability and used in the same manner. Use one part oil to fifteen parts water for aluminum sawing.
A drawback to some synthetic oils is animal fat in the formula which deteriorates in time, and at high temperatures, causing breakdown of the fats, creating an unpleasant odor.
This machine can use this fluid.

Some cooling/cutting fluid used in high speed aluminum machining and free-machining alloys contain chemical wetting agents.
The application is useful but side effects are harmful to the work piece and the machine.

Do not use chemical coolant in this machine unless factory labels clearly show machine equipment includes corrosion resistant pump, hoses, seals and paint.

C. Mechanical.

1. Blade installation.
Do not install a blade on this machine before completing the machine pre-operation check-out.
See the Saw Blade Selection and Application manual to select the proper blade for the work piece.
For maximum feed, speed and blade life, request a reliable blade supplier conduct test sawing with his recommended blades on the machine and the work piece.

**WARNING:** Blade handling can do great bodily harm.

Wear heavy protective gloves for positive control of the blade.
**Never wear gloves while operating this or any machine tool.**
**Guard against all other body contact with the blade.**

Follow blade manufacturer instructions for safe, proper unpackaging a new blade for installation.
Do not recoil a used blade. Cut it apart for disposal. Follow blade manufacturer instructions for breaking in a new blade.

a. Release blade tension.

b. Raise the saw head so the guide arms clear the vise jaws.

c. Lock or tag out the electric switch.

d. Open the blade wheel guard doors. Blade wheels rotate counterclockwise, drawing blade teeth through the work piece from left to right against the stationary vise. Hold the blade in front of the wheels with teeth pointing to the back of the machine.
Teeth on the lower blade loop must angle right, toward the drive wheel.
If teeth on the lower loop point to the back of the machine but angle left, toward the tension wheel, the band is inside out. Reverse it.
For safety, clear personnel from the area.
Loop the band over a handy guard post or trash barrel. Twist the band, as far around the circumference as necessary, until the band snaps over.
This dulls blade teeth. Give blade suppliers the proper blade welding configuration for the machine.

e. Again, hold the blade in front of the wheels with teeth pointing to the back of the machine.
Teeth on the lower loop must angle right, toward the drive wheel.
f. Place the top of the loop over the saw head, into the blade guard channel and onto the wheels. Pull the back of the band up next to the wheel flanges.

g. Tension the blade just enough to take up slack in the band.

h. One guide at a time, take the blade firmly on each side of the guide, twist the teeth down and bring the back edge of the blade up between the guide blocks.

i. Check that the back of the blade is against the wheel flanges. Close the blade wheel guard doors. Start the blade and run it 30 seconds.

j. Shut down the machine. Check that the back of the blade is close to, but not scrubbing on the wheel flanges. .010" to .030" clearance is ideal. Check blade tension before each cut.

2. Blade wheel alignment.
Factory-aligned, inspected and tested wheels, blades and guides require no maintenance. Blade wheel alignment is not part of routine machine set-up for a sawing operation. Experimenting is the usual cause of misalignment, or bumping the wheels or guides with the work piece or material handling equipment.
Routinely check the wheel flanges for wear and be alert to audible and visual changes in machine operation.
A high-pitched metal-to-metal scrubbing sound coming from the wheel guard doors is the blade wearing against the wheel flange. The blade wears the flange from the wheel before the blade breaks.
When checking wheel alignment use only a new blade, known to be straight. A used blade may have a camber, making adjustment results useless.

To inspect the wheel flanges or adjust either wheel, release blade tension and lock or tag out the electric switch.

A. To adjust the tension wheel, see the contents page for the tension wheel assembly print, and Figure 1, page 10.

a. Open the tension wheel guard door. The tension wheel mounts on a sliding plate. Locate and loosen two lock nuts, top and bottom of the outside edge of the slide plate. A set screw beside each lock nut is a spacer for the plate.

See "A" Figure 1
The wheel is low on the outside, the blade running too far away from the wheel flange. Turn both set screws clockwise, equally, ¼ turn each, pushing the outside rim of the wheel up away from the frame plate.

NOTE: Do not overcompensate. Turn the set screws ¼ turn only.

b. Tighten the lock nuts.
Close the wheel guard doors. Tension the blade. Start the blade and run it 30 seconds.

c. Shut the machine down.
Check that the blade is not still running too far away from, or scrubbing on the wheel flange. .010" to .030" clearance is ideal.

![Figure 1, Tension Wheel.](image-url)
d. See "B" Figure 1.
The wheel is high on the outside, the blade running too close to the wheel flange, scrubbing.
Turn both set screws counterclockwise, equally, \( \frac{1}{4} \) turn each, drawing the outside rim of the wheel closer to the frame plate.

NOTE: Do not overcompensate. Turn the set screws \( \frac{1}{4} \) turn only.

e. Tighten the hex nuts and check the clearance as in step (4).

B. To adjust the drive wheel, see the contents page for the blade drive assembly print, and see Figure 2.

a. Open the drive wheel guard door.
The drive wheel mounts on a plate.
Locate and loosen two lock nuts, top and bottom of the outside edge of the plate.
A set screw beside each lock nut is a spacer for the plate.

b. See "A" Figure 2.

The wheel is low on the outside, the blade running too far away from the wheel flange.

Turn both set screws clockwise, equally, \( \frac{1}{4} \) turn each, pushing the outside rim of the wheel up away from the frame plate.

NOTE: Do not overcompensate. Turn the set screws \( \frac{1}{4} \) turn only.

c. Tighten the lock nuts. Close the wheel guard doors. Tension the blade. Start the blade and run it 30 seconds.
d. Shut the machine down. Check that the blade is not still running too far away from, or scrubbing on the wheel flange.
.010" to .030" clearance is ideal.

e. See "B" Figure 2.

The wheel is high on the outside, the blade running too close to the wheel flange, scrubbing.

Turn both set screws counterclockwise, equally, \( \frac{1}{4} \) turn each, drawing the outside rim of the wheel closer to the frame plate.

NOTE: Do not overcompensate. Turn the set screws \( \frac{1}{4} \) turn only.

f. Tighten the hex screws and check the clearance as in step (4).

3. Blade tension adjustment.
Tension the blade as tight as comfortably possible with one hand--two hands for high speed steel blades.
Optional factory-set blade tension indicator is for blade types used in general purpose sawing. Tension the blade to the witness mark on the indicator. For maximum feed, speed and blade life consult a reliable blade supplier for proper tooling.
Request test cuts on the machine and the work piece with his recommended blade.

Tension the blade to manufacturer specifications with a precision tension gauge mounted on the blade.
A. With the recommended blade installed, before taking up tension, the supplier will mount his gauge on the blade.

B. Tension the blade.
When the blade supplier indicates proper tension for his blade, mark the location for sawing reference.
Scribe a new witness mark on the optional tension indicator. On the standard machine, mark the tension wheel slide plate location.
If blade types change for sawing other work, tension the new blades to manufacturer specifications.

Blade brush alignment to the saw blade is important to brush and saw teeth life. Adjust the brush properly against the blade. The tendency is to adjust the brush too tight to the blade. This quickly makes the brush misshaped and useless.

Adjust the brush 30° to the surface of the blade, so the brush contacts the blade teeth only lightly to do an effective job of cleaning teeth gullets without abrading saw teeth or excessively wearing the brush.

5. Sawing force check.
Too much or too little sawing force results in uneven sawing or broken blades.
For the cost of a regular fish scale, much less than the cost of broken saw blades, measure the blade force actually applied.

a. Turn off the blade. Raise the saw head, spread the guide arms, tension the blade and open the vise.

b. Place a fish scale on the lifting handle on the end of the frame.

c. Turn the sawing force hand wheel all the way out to the end of the screw, no spring tension on the balanced saw head, the greatest sawing force.

d. DO NOT START THE BLADE.

Open the saw head approach feed control valve slightly to start the saw head coming down slowly.
The saw frame comes down pulling on the scale, showing how much force the blade is applying on the work piece. Turn the hand-wheel in until the reading on the scale is 10 - 12 lbs. This is proper cutting force.

With each blade change check the blade guide blocks for dirt, wear and proper blade clearance.
See the contents page for the blade guide print. Guide blocks are .001 wider than blade thickness.
For example a .035" blade thickness requires .036" guide block clearance.

a. Use feeler gauges to check the clearance. Or, assemble a new blade on the machine and tension it.
Lock or tag out the electric switch.
Look for a tight or loose fit between the blocks. Force the blade down out of the blocks. The tensioned blade must only partly return up into the guide blocks.
Look for blade movement between the guide arms. Twist the blade between the tension wheel and guide. Twist the blade between the drive wheel and guide. The blade must not move between the guides when twisted from outside the guides.

b. If feeler gauge readings are correct, or the tensioned blade only partly returns when pushed down out of the guide blocks and does not move between the guides when twisted from outside the guides, the guide blocks have proper clearance for the blade.

b. If feeler gauge readings are correct, or the tensioned blade only partly returns when pushed down out of the guide blocks and does not move between the guides when twisted from outside the guides, the guide blocks have proper clearance for the blade.

c. If feeler gauge readings are not correct, if the tensioned blade freely returns up into the guide blocks when forced down, if the blade moves between the guides when twisted from outside the guides, the guides have too much clearance.
The carbide block at the back of the guide arm rigidly mounts to the arm and is not adjustable. The front block has minimum adjustment for blade clearance.

(1) Lock or tag out the electric switch. Release blade tension and remove the blade.

(2) To remove the adjustable carbide blade guide block, loosen the hex head screws in the bottom of the guide block. The mounting block drops off with carbide face intact.

(3) Flush out the guide and inspect the blocks and backup slipper. If carbide blocks show wear or the backup slippers have a blade track worn more than .030", rotate, resurface or replace the blocks.

(4) To replace the stationary carbide block remove the flat head screw in the face of the block. Greatest wear from the wheel plane and blade twist is at the bottom of the block. Rotate the block 180° or replace it. This block is not adjustable. Do not resurface the carbide more than .010". More than .010" leaves the blade too close to the blade wheel flange, scrubbing.

(5) To remove a carbide blade backup slipper with a blade track worn deeper than .030", remove the ¼" x 2" socket head screw front center of the guide. Pull the screw out until the slipper drops out of the guide. Rotate the slipper block 180° to an unused side, resurface or replace the backup slipper. Do not resurface the backup slipper more than .030". More than .030" would let the blade ride up between the guide blocks. Reassemble the slipper, then reassemble the stationary block.

(6) Rotate, resurface or replace the adjustable carbide block and reassemble it to the mount block. Loosely assemble the adjustable mount block to the bottom of the arm. Use feeler gauges between the blocks and adjust the socket set screw in the face of the guide arm to set blade clearance .001" more than blade thickness. Or, assemble a new blade on the machine. Hold the blocks finger-tight against the blade. Tighten the set screw up to but not moving the mount block. Tighten the hex head screws in the bottom of the block.

(7) Go back to the beginning of this section and check blade clearance between the guide blocks. CAUTION: Guides adjusted too tight to the blade make the blade snake through the guides, saw crooked and break. If the guides are too tight against the blade, loosen the hex head screws in the bottom of the mount block. Back the set screw off the block one quarter turn. Tighten the hex head screws. If the blade has more than .001" clearance between the blocks, loosen the hex head screws, tighten the set screw one quarter turn against the block. Tighten the hex head screws. Check clearance between the blocks and blade at .001".

7. Drive belt adjustment.
Primary and drive belts require no adjustment for many years. Do not use sharp tools, pry bar or screw driver, to separate the pulley faces when changing variable speed belts, use a block of wood. Scratches or burrs on a pulley face quickly ruin a new belt. The electric motor drives the belt to the counter-shaft pulley assembly. The final drive belt, or timing belt, connecting the countershaft assembly to the drive pinion pulley requires no adjustment other than replacing a worn belt after years of use.
Adjust the new belt to the point it slides back and forth on the pinion drive gear shaft. If the belt is too tight, or sings, it is wearing prematurely. A half inch flex at mid-span is proper adjustment.

To adjust the tension, loosen the hex head bolt to the right of the pinion gear inside the drive wheel cover. To tighten the belt, rotate the cam bushing under the bolt head, the off-center part to the top.

Check the belt. Before tightening the hex bolt, check clearance between the ring and pinion gear, described in item 8.

8. Ring and pinion adjustment.
Proper drive ring and pinion gear clearance is .010".
If noise develops after years of wearing in, check the clearance.
Tension the blade. Jog the drive wheel back and forth to detect play between the ring and pinion gears. Check the clearance with feeler gauges and adjust it to .010".
Tension the blade and loosen hex head bolts either side of the pinion.
Do not rotate the drive belt cam bushing under the hex head.
To close the clearance, tap the pinion gear lower shoulder up toward the ring gear.

D. Electrical Maintenance.
WARNING: COMPLETE THE PRE-OPERATION CHECK-OUT BEFORE STARTING THIS MACHINE.

A qualified electrician must make electric hook up and adjustments to this equipment. See machine voltage, labeled on the electric switch door. See the contents page for the electric print.

A. During machine installation and trial running, unplug the coolant pump at the in-line disconnect at the back of the machine, or fill the coolant reservoir. Coolant is a heat sink for the pump and it must not operate unless submerged in coolant. See maintenance section part "B" on coolant fluids.

B. After electric hookup, check motor rotations.
Open the blade drive wheel guard door.
Start the saw blade drive motor.
The blade drive wheel must rotate counterclockwise. If it does not, press the Stop control.
Lock or tag out the electric switch.
Reverse service into the machine electric cabinet, reversing drive motor and wheel rotation to counterclockwise, the direction necessary for sawing.

DO NOT reverse wiring at the drive motor.

C. Motor switch automatic shut off adjusts for constant running when sawing many pieces. Loosen the set screw on the motor switch rod at the electric cabinet. See the contents page for the switch assembly drawing.
To reset the switch for automatic shut off, lock the saw head in place a quarter inch above the head rest block. Turn the switch on. Bring the automatic shut off control up under the saw head and tighten the set screw on the switch rod.
Make sure the saw head rests fully on the head rest, not the switch.

D. Optional blade break switch shuts down the drive motor if the blade breaks or loses tension for any reason. See the contents page for the optional equipment drawing.
The tension wheel slides over, triggering the switch, breaking the electric circuit to the drive motor.
Make sure the blade is not too long for the machine.
E. Parts and Service.
Most-used replacement parts are available from factory stock with same-day shipment. Service is available by telephone conference or a service call to the machine site.

1. Parts.
For 95% insurance against downtime, the lists show most commonly used parts. Program them into inventory on a replace-as-used basis.
2,000 hours equals one eight hour shift working for one year.

Account for spare parts. Enter them into inventory with a zero stock level reordering system to assure availability when the need arises.
Write additional part numbers assigned for plant systems compatibility on the lists for reference.
Shelf life for parts listed is indefinite, only so long as packaging is intact.
Look for packaging opened for inspection, authorized or otherwise.
Repackage and identify parts in suitable containers to preserve usefulness when the need arises. Except fluids, expect machine life of those parts planned for replacement to exceed the hours shown by as much as three times. Variables are machine operator and original equipment manufacturer workmanship reliability.

Nuts, bolts and common parts normally obtained from hardware or mill supply stores may not show a part number on the prints, but do show a part description for local source replacement.

If you cannot identify a needed part, call our parts department with a detailed description of the part, where it is on the machine and what it does in operation.
This is enough information for our parts department to identify and supply the part or provide information for what to purchase locally.

2. Service.
Preventive maintenance is the only requirement for many years, with expendable belts, bulbs, and blade brushes replaced by maintenance personnel.
It is vital to machine life and sawing efficiency that machine operators and maintenance personnel read and have access to the contents of this binder.
If a sawing or machine malfunction occurs, get at the cause of the problem rather than remedy a series of side effects. The index in this manual is topical, offering a solution to common problems.

If your plant personnel cannot resolve a machine problem do not hesitate to call our service department.
A factory-trained and qualified person will resolve the malfunction on the telephone, or arrange a service call to the machine site.

For Parts or Service Call:
TELEPHONE:
269-279-5123
FAX: 269-279-6337
E-MAIL:
SALES@WFWELLS.COM
WEB PAGE:
WWW.WFWELLS.COM

For faster service, furnish the machine model and serial number from the identification plate on the machine bed.

SEE SPARE PARTS LIST NEXT PAGE
MODEL L-10
BUILD# .003

RECOMMENDED SPARE PARTS FOR 95% INSURANCE AGAINST DOWNTIME
ON A REPLACE-AS-USED BASIS

Group I, 2,000 Hours

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>900083</td>
<td>Blade brush.</td>
</tr>
<tr>
<td>1</td>
<td>901200</td>
<td>Blade brush bearing.</td>
</tr>
<tr>
<td>6</td>
<td>900611</td>
<td>Blade guide blocks (4), backup slippers (2).</td>
</tr>
<tr>
<td>1</td>
<td>909060</td>
<td>Blade drive V-belt.</td>
</tr>
<tr>
<td>1</td>
<td>908550</td>
<td>Timing belt.</td>
</tr>
<tr>
<td>1</td>
<td>410210</td>
<td>Vise screw, barrel half-nut.</td>
</tr>
</tbody>
</table>

Group II, 5,000 Hours

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>900086</td>
<td>Lift cylinder leather, 13/4&quot;.</td>
</tr>
<tr>
<td>1</td>
<td>410470</td>
<td>Drive wheel ring gear.</td>
</tr>
<tr>
<td>1</td>
<td>410490</td>
<td>Drive wheel pinion gear.</td>
</tr>
</tbody>
</table>

Group III, 10,000 Hours

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>415194</td>
<td>Tension wheel assembly with bearings, 1&quot; blade.</td>
</tr>
<tr>
<td>1</td>
<td>415196</td>
<td>Drive wheel assembly with bearings and ring gear, 1&quot; blade.</td>
</tr>
</tbody>
</table>
PREVENTIVE MAINTENANCE LUBRICATION

MODEL L-10 BUILD .003

The following recommendations are for nominal-clean operations. Consider shop conditions and machine use when wiping oil on exposed areas.

Saw blade and guide lubrication depends on a properly functioning coolant distribution system. Check coolant pump screens often to be sure they are clean and in place. Clean the coolant reservoir and change or filter the coolant fluid often, depending on coolant type and machine use.

DO NOT use oil or grease on the drive wheel ring or pinion gears.

Grease causes dirt and chips to cling and clog the gears.

The motor pulley (908840) has been permanently lubricated and no additional lubrication is required. Cycling the drive through the entire speed range is not required.

### 200 HOURS

**GREASE** with NLGI No. 2

Blade tension wheel slide and screw, under the wheel.

**CRC 336 or equal**

*WIPE CLEAN FIRST, THEN APPLY*

Cylinder rod and pivot.
Saw head pivot.
Guide arm beam.
Vise slides.
Vise screw, add a few drops to the bearing on the end of the screw.
Speed adjusting crank at the back of the saw head.

### 2,000 HOURS

Door hinges and latches.

### 25,000 Hours

Electric motor bearings, at grease fittings on the motor.
Supplement
Optional Roller Guides.

1. Blade guide inspection.
NOTE: Consider the next three steps and inspect the guides before making adjustments. Routinely, when changing blades, check the guide rollers and backup roller for dirt and sludge and proper guide roller clearance. Normally, guides require adjustment only after years of wearing in.
If stock moving under the blade, or material handling equipment working near the machine bump the guides they break or misalign and require adjustment or replacement. Following are three preventive maintenance checks.

a. Clean, inspect and adjust the guide rollers.

(1) Guides are factory set .001” wider than blade thickness. .035” blade thickness requires .036” guide roller clearance.
See the contents page for the blade guide print. Guide rollers adjusted too tight or too loose cause erratic sawing rates, inaccurate cuts and broken blades.
Release blade tension and lock or tag out the electric switch.

(2) Remove the blade and flush out the guides.

(3) Check roller clearance with feeler gauges, or, assemble a new blade on the machine and tension it. Look for a tight or loose fit. Force the tensioned blade down out of the guide it must only partly return when released.

(4) Look for blade movement in the sawing area between the guides. Twist the blade back and forth between the blade wheel and guide.

(5) If feeler gauge readings are correct, or if the tensioned blade only partly returns when pushed down out of the rollers and there is no blade movement between the guides when twisted from outside the guides, sawing problems are not with guide roller clearance.

(6) If step (5) failed, adjust the guide rollers. One roller on each guide rigidly mounts to the casting and is not adjustable. The companion roller adjusts on a cam shoulder bolt. Loosen the lock nut on top of the roller casting, unlocking the hex head cam bolt under the roller.

(7) Use feeler gauges between the rollers to adjust clearance .001” wider than blade thickness, or go back to step (3).
Caution: Rollers gripping the blade too tight make the blade snake through the rollers. Inaccurate sawing and blade break result.

b. Horizontal guide adjustment.
It is critical when making this check to first align the vise jaws 90° to the saw bed.

(1) Use a combination square with the head centered. Place the 90° side of the head into the vise slide in the saw bed and bring the face of the stationary vise jaw to square with the combination blade.
Make the same adjustment on the movable vise jaw.

(2) With vise jaws aligned square to the saw bed, move the 90° side of the square head to the end of the combination blade. Place the head against the stationary vise jaw and bring the square blade up against the saw blade to check for square.
If the blade is square to both vise jaws, go to step c.

(3) If the saw blade is not 90° to both vise jaws discover which guide (or both) is out of alignment.
Mount a new blade on the machine and bring it to full tension.
On top of the guide beam, loosen both guide arm clamps; the tensioned blade will draw the guides into alignment.
Check the blade, square to the vise jaws. Tighten one guide arm clamp at a time to see which arm is pulling the tensioned blade out of square to the vise jaws.

(4) To align the saw blade to the vise jaws, clamp the arm at the guide beam and see the contents page for the blade guide print.

(5) Loosen hex screw at the top of the plate holding the guide assembly to the arm and the hex nut immediately under it, unlocking the assembly plate and cam bolt, allowing the assembly to rotate into alignment.

(6) Locate the hex head cam bolt on the opposite side of the plate from the hex lock nut and adjust the plate and blade into alignment with the blade wheels, square to the vise jaws. Use the combination square against the blade and vise jaws to check the alignment. See step (1).

c. Vertical blade/guide adjustment.
With the blade aligned square to the vise jaws, rotate the blade back to square with the saw bed.

(1) Place a dial indicator on the saw bed near either guide with the contact point against the saw blade, directly above the tooth gullet.

(2) Set the dial to "0." Open the saw head control valve slightly, bringing the blade down across the dial indicator contact point slowly. If the dial indicator reads "0" bottom to top of the blade at both guides, the blade is square to the saw bed.

(3) If the dial indicator does not read "0" bottom to top of the blade, adjust it to "0. Locate the adjusting screw just above the guide rollers. See the Blade Alignment bulletin and the blade guide print. Turn the adjusting screw to tilt the roller assembly, bringing the blade to vertical square with the saw bed.

Visually check alignment with the combination square.

Make a positive check with the dial indicator.
Material Safety Data Sheets

W. F. Wells Incorporated supplies the following Material Safety Data Sheets, furnished us by the original manufacturer, of the product, as a material used in our equipment of manufacture.

Responsibility for accuracy of information therein rests with the manufacturer of the product.
It is our intent to seek out, use and pass along to our customers the safest products available, necessary to the operation of our equipment.

1st Ayd Gel Lube  The product is rust-inhibitive fluid, used on all of our band saw machine tools.
The product is applied to unpainted surfaces before shipping the equipment.

602623 MOBIL DTE 24  The product is hydraulic fluid, used in all of our band saw machine tools.
The product is in hydraulic fluid reservoirs, motors and cylinders activated with hydraulic fluid.
909050  COMPLETE PULLEY ASSEMBLY, MINUS PINION

FHCSI42034  SCREW
410570  PINION
HN5818  HEX NUT

909051  SHAFT
HJN5818  HEX JAM NUT

908550  BELT (REF)
901503  BEARING

909052  KEY
901103  BEARING
901204  BEARING

TS14201  THUMB SCREW

905055  PLUG

906739  RETAINING RING

909054  CRANK
909053  INDICATOR

909060  BELT (REF)

MINIMUM  7/8

906884  RETAINING RING

ANI213  HIGH CROWN ACORN NUT

907002  SPRING

W. F. WELLS INC.
COUNTERSHAFT ASSEMBLY
DATE: 11-28-00

W-9  415355
To remove pulley:
1. Loosen draw bolt until it protrudes from the pulley shaft about 1/4".
2. Using a hammer, firmly tap the head of the draw bolt. Repeat if necessary until the pulley becomes obviously loose on the shaft.
3. Slide the pulley off the shaft.
4. Before reinstalling the drive, inspect the IC collet and draw bolt for any signs of burrs or other damage.

Tighten the draw bolt to 175 inch pounds.
MACHINE BASE

1/2-13 x 4 LAG BOLT

FLOOR LINE

SHIM STACK

SCREW ANCHOR

DRILL HOLE

L-10 RECOMMENDED ANCHORING AND LEVELING.