Instruction Manual

DoALL SAWING PRODUCTS

C-650NC

Serial No: 510-09143 to

Band Sawing Machine

DAMAGE CLAIM PROCEDURES

VISIBLE DAMAGE AT THE TIME OF DELIVERY:

1. Note damage on carrier's delivery receipt. Accept the shipment. It can be returned later if repairs are not possible in the field.

2. Request a "damage inspection" from the delivery carrier:

    a. The carrier will send his own people or contract an independent agency to make the inspection.

    b. The inspector will request a signature on the report and leave a copy.

    c. The carrier "damage inspection" report is not final. If additional damage is found when repairs are started, contact the carrier for another inspection; or at least give them the details of the damage.

3. Do not move the equipment from the receiving area and keep all shipping materials until carrier "damage inspection" report is complete.

4. If possible, take photographs of the damage and keep them for your files. Photos could possibly prove a claim at a later time.

5. Keep a record of all expenses and be sure they are documented.

6. Repair damage in the field whenever possible. Carriers encourage this to keep expenses down.

7. You have nine (9) months to file a claim.

CONCEALED DAMAGE:

1. You have fourteen (14) days to report damage not noted at time of delivery.

    a. Report damage as soon as possible. This makes it easier to prove that it did not happen at cosignee's plant.

    b. Inspect machine(s) carefully before moving from the receiving area. Again, if machine is not moved, it is easier to prove your case.

2. Request a "damage inspection" from the delivery carrier:

    a. The carrier will send his own people or contract an independent agency to make the inspection.

    b. The inspector will request a signature on the report and leave a copy.

    c. The carrier "damage inspection" report is not final. If additional damage is found when repairs are started, contact the carrier for another inspection; or at least give them the details of the damage.

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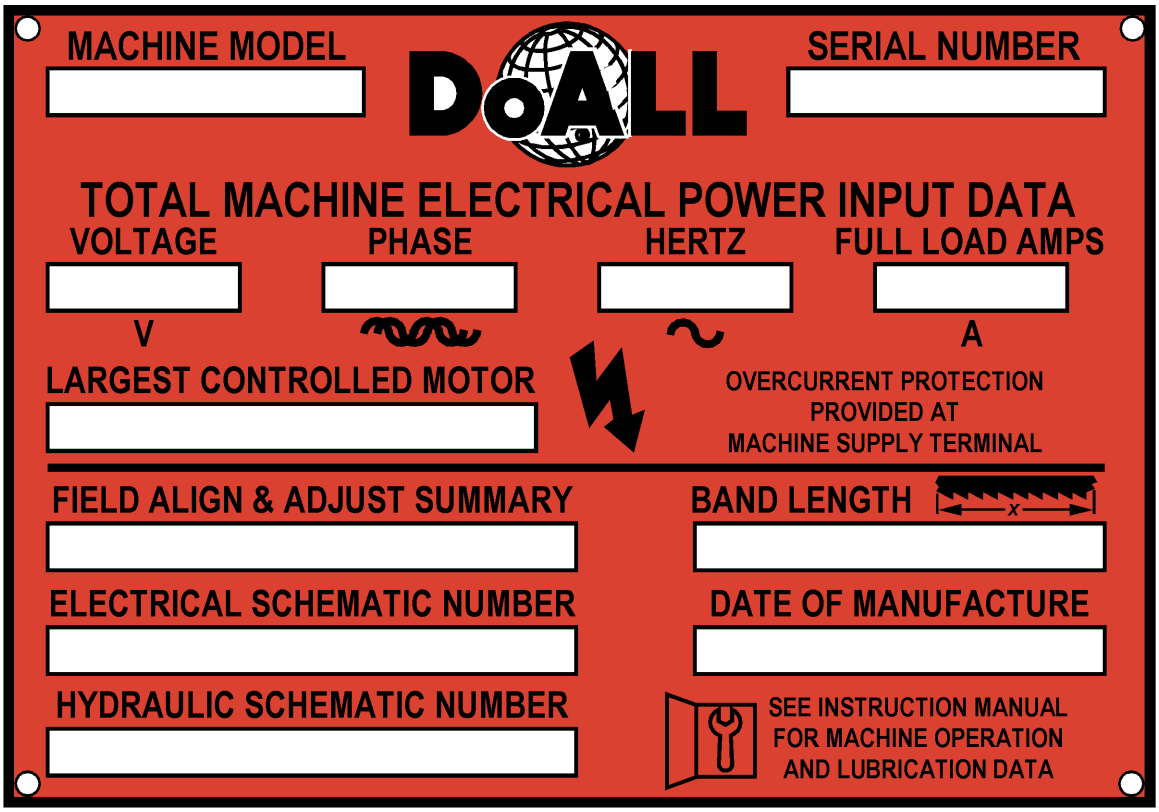
OPERATOR'S INSTRUCTION MANUAL
METAL CUTTING BAND SAW

MODEL	FIRST SERIAL NO.	LAST SERIAL NO.
C-650NC	510-09143	



For your information and future reference, pertinent data concerning your machine should be written in the spaces provided above. This information is stamped on a plate attached to your machine. Be sure to provide machine model and serial numbers with any correspondence or parts orders.

Specifications contained herein were in effect at the time this manual was approved for printing. The DoALL Company, whose policy is one of continuous improvement, reserves the right, however, to change specifications or design at any time without notice and without incurring obligations.

PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATING THE MACHINE!
For Sales, Parts and Service, call 1-888-362-5572

DoALL SAWING PRODUCTS
2375B TOUHY AVENUE
ELK GROVE, ILLINOIS 60007 U.S.A.

PRINTED IN U.S.A. **PB-539 (11-09)**

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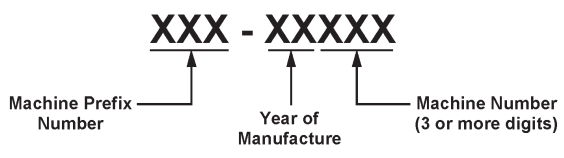
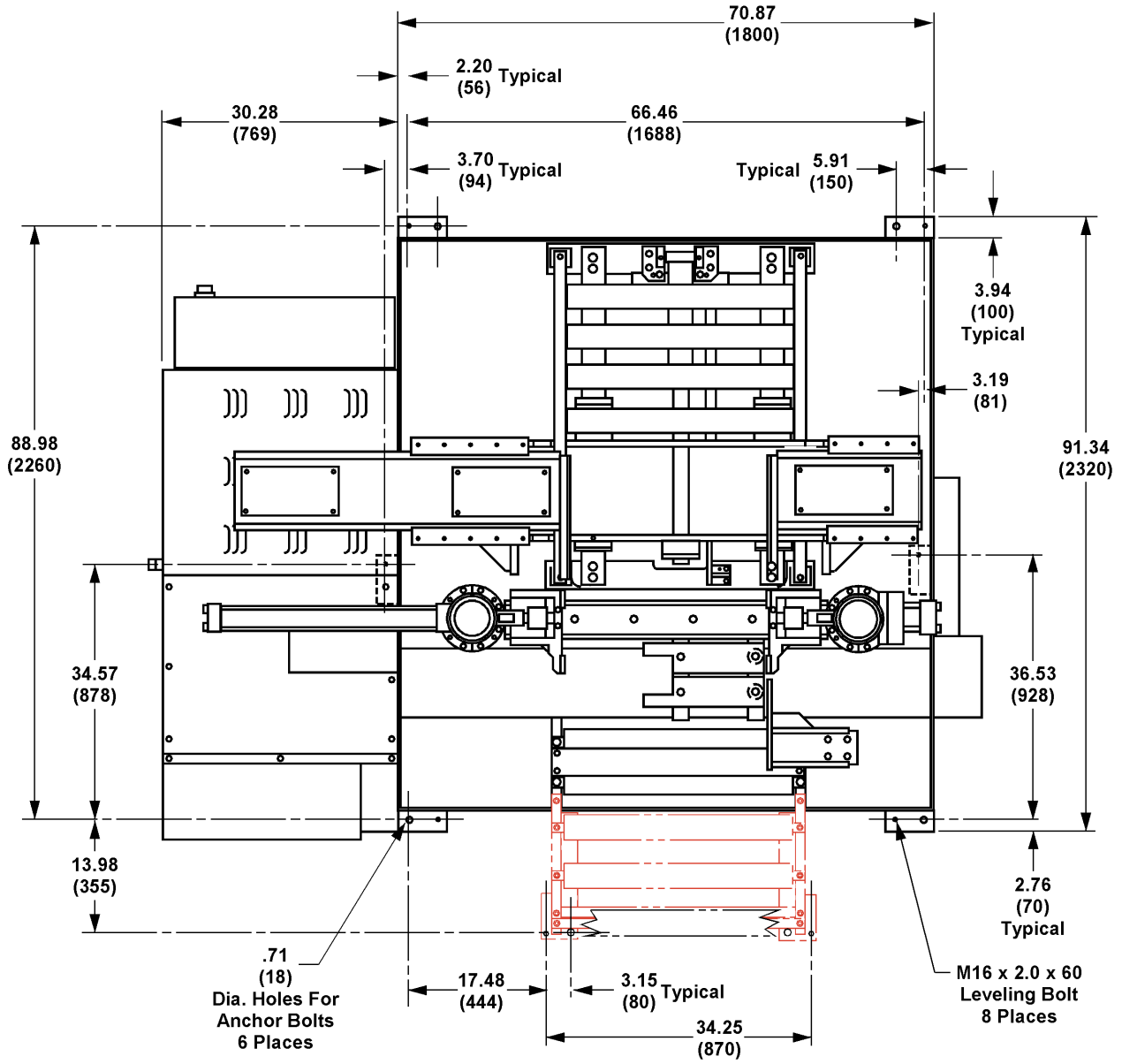
How to read your serial number:

Example: 500-001234



MACHINE DIMENSIONS

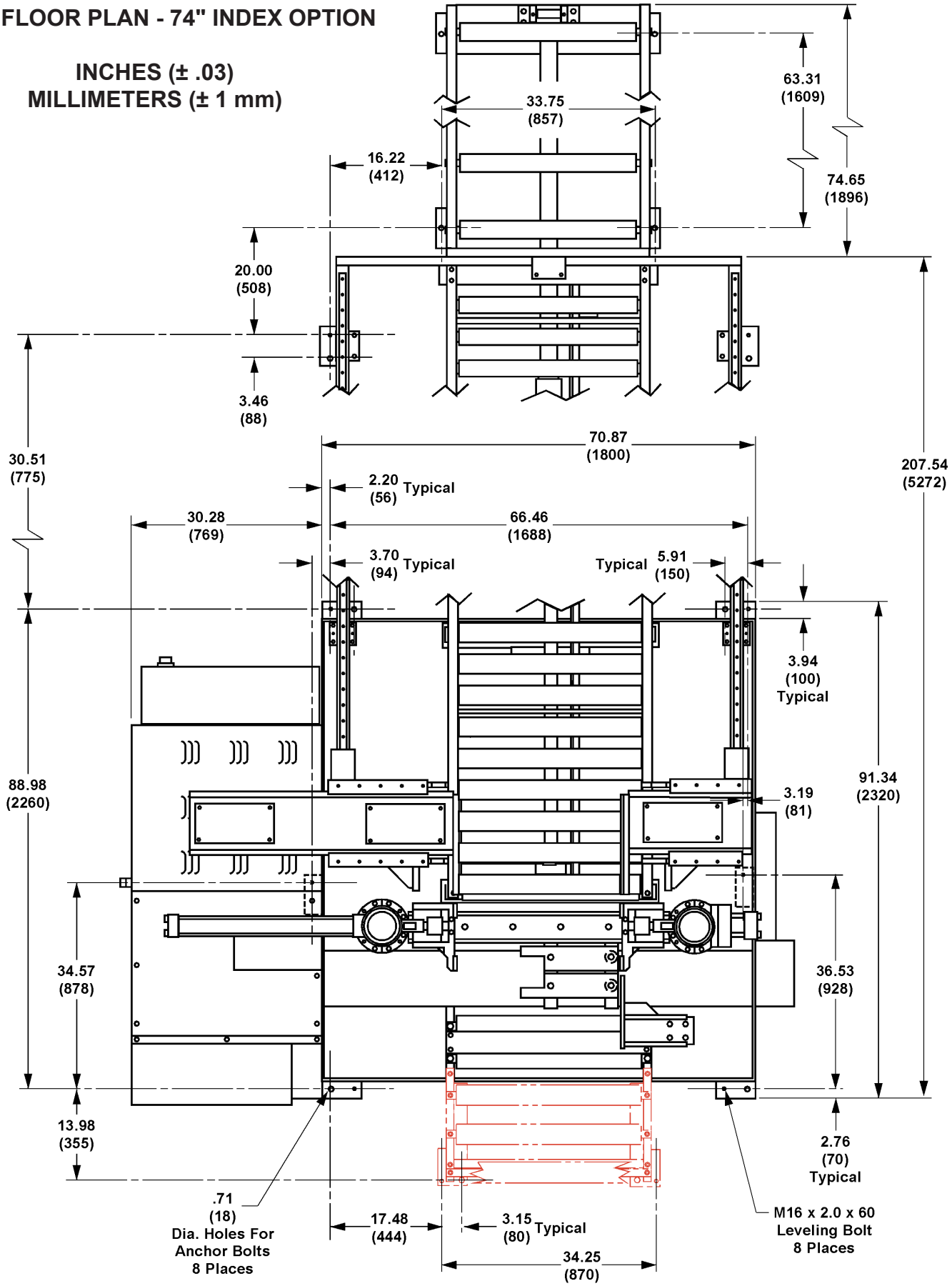
INCHES (± .03)
MILLIMETERS (± 1 mm)



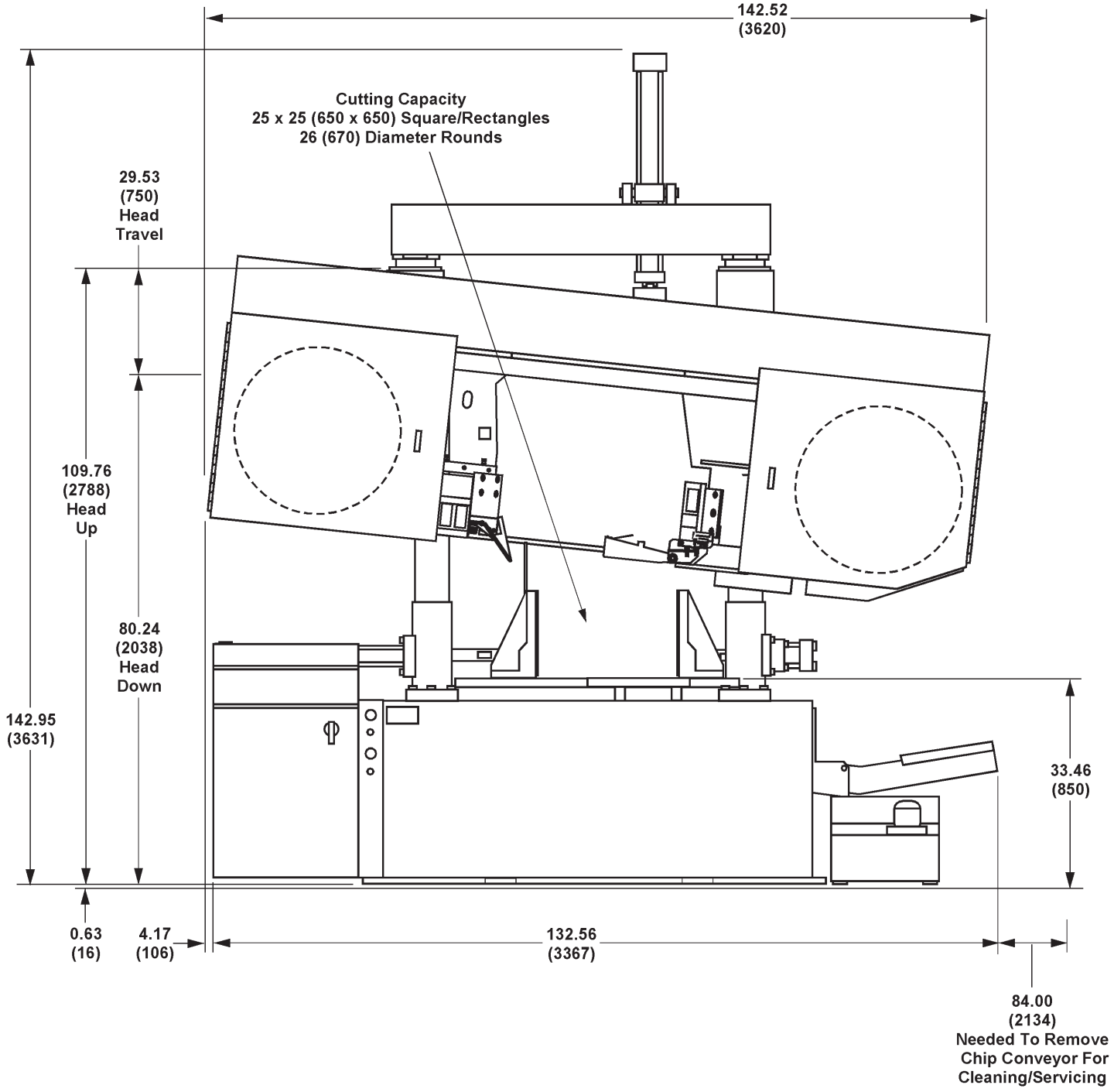
FLOOR PLAN

FLOOR PLAN - 74" INDEX OPTION

INCHES (± .03)
MILLIMETERS (± 1 mm)

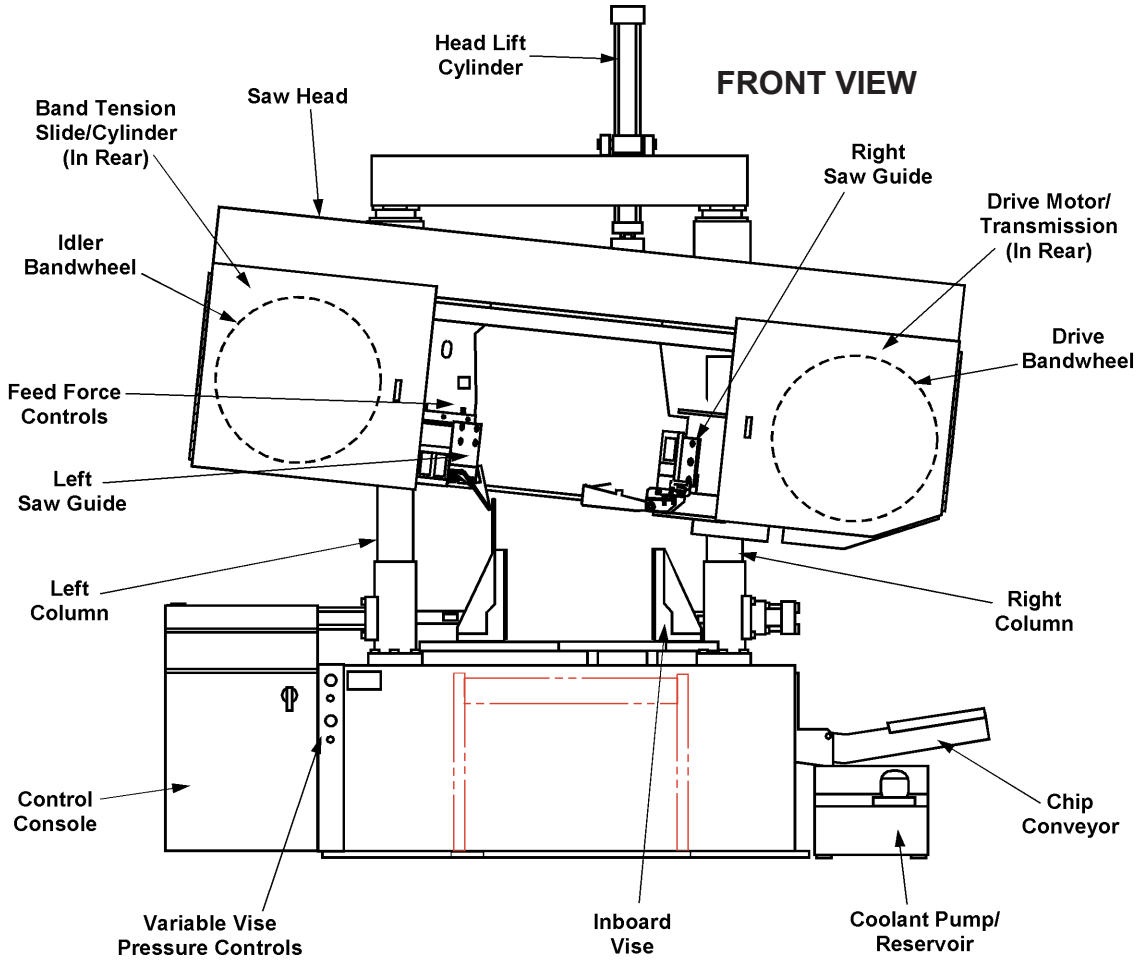


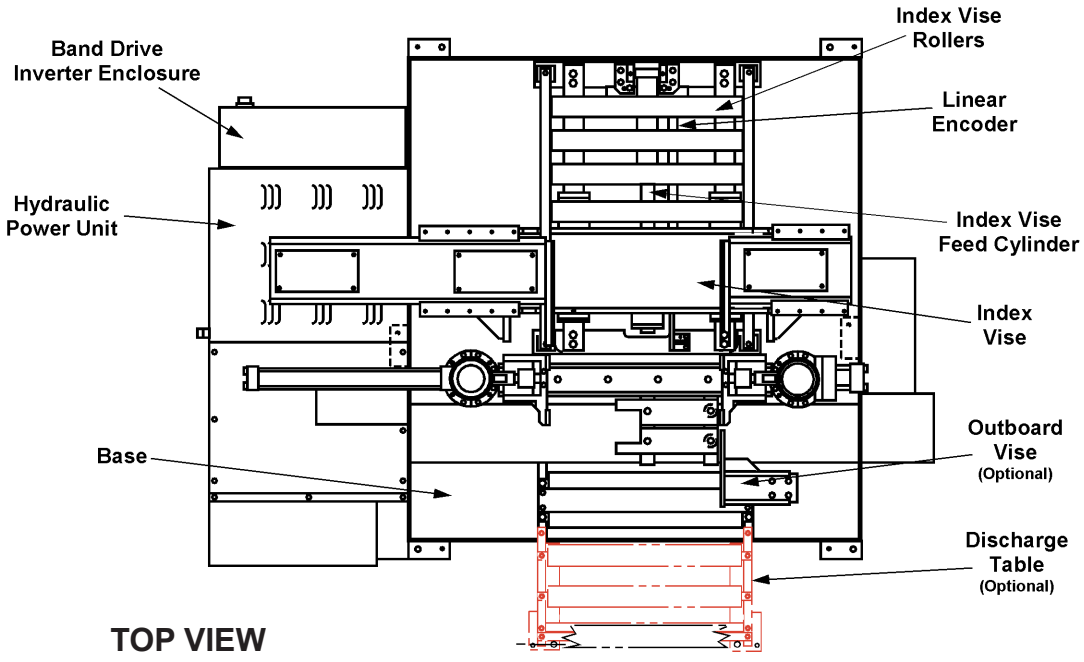
INCHES (± .03)
MILLIMETERS (± 1 mm)



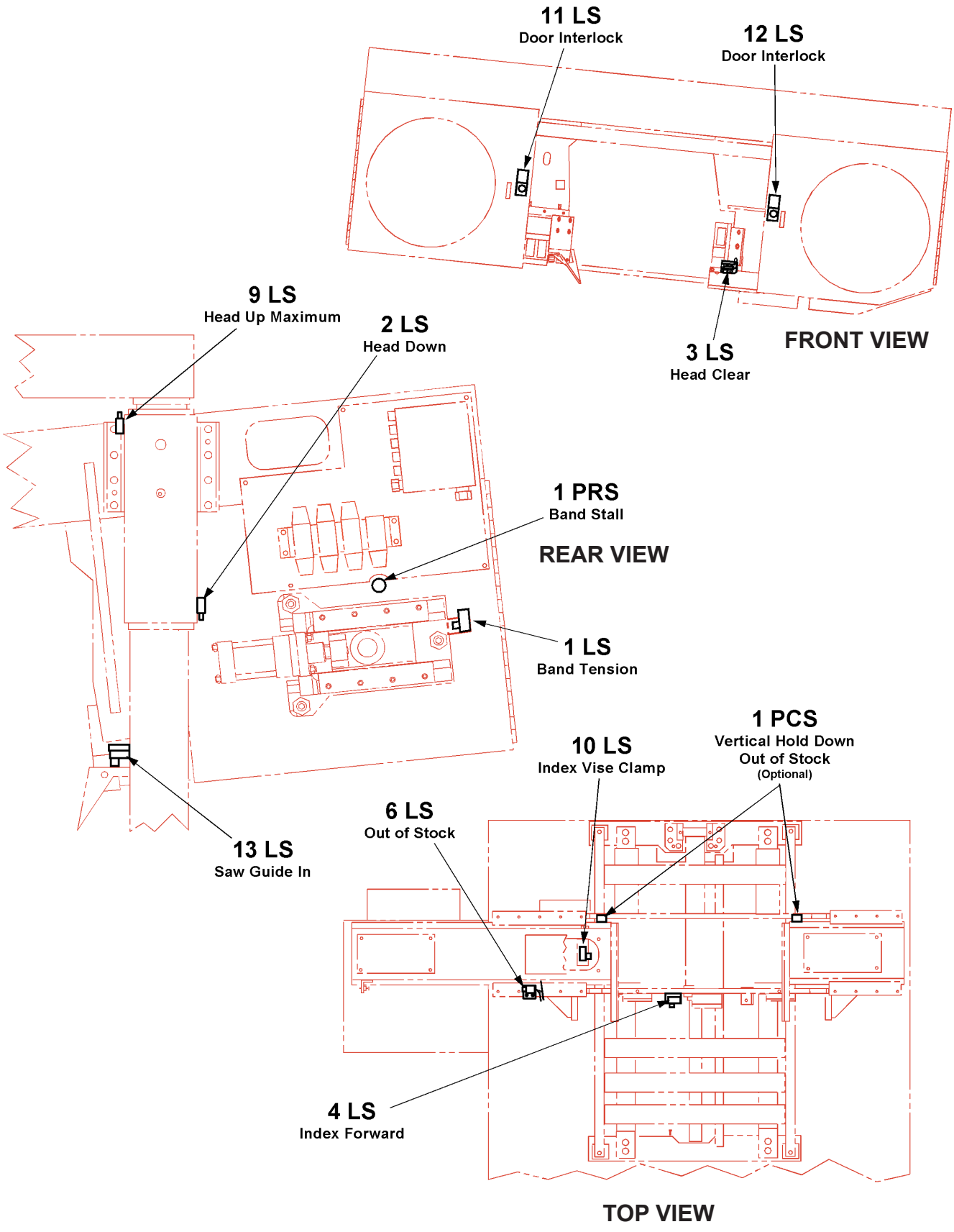
FRONT VIEW

MACHINE FEATURES





LIMIT SWITCH LOCATIONS



INSTALLATION

All the "left", "right", "front" and "rear" designations in this manual are as viewed by the operator facing the control console.

LOCATION

1. The floor area required by the standard machine is approximately 143 inches (3632.0 mm) in width by 94 inches (2388.0 mm) in length. Approximate machine height is 143.00 inches (3632.0 mm). Refer to pages 1 and 2 for further machine dimensions.

2. The machine's final location should also provide the following: **(a)** Sufficient space for easy stock loading and unloading; **(b)** Clearance for door openings and head movement; **(c)** Adequate clearance for necessary lubrication, maintenance and repair procedures, including chip conveyor removal.

3. Accessories such as roller stock conveyors and other material handling equipment will require additional work area.

OSHA NOTICE!!

OSHA Regulation 1910.212 (5B).
Machines designed for a fixed location shall be securely anchored to prevent walking or moving.

UNPACKING

1. The machine is fastened to and shipped on a wooden skid. Overseas shipments are also crated.

2. Remove all protective covers, strapping, crating, etc. except for those blocks wrapped around the columns that hold the saw head. Then: **(a)** If necessary, remove all bolts which fasten the machine to the shipping skid; **(b)** Remove any loose boxed items that may have been placed on the vise bed; **(c)** Inspect the machine and all parts for shipping damage. Claim procedures are listed on this manual's inside front cover.

CLEANING

1. If necessary, use solvent to remove rust-preventive coating applied to exposed bare metal surfaces.

LIFTING

NEVER lift the machine by its sawing head.

1. Four (4) permanent eye holes are provided for machine lifting purposes: **(a)** Two (2) eyes are located on the machine's left (on the base and rear of the feed table); **(b)** Two (2) other eyes are located on the feed table's right in similar locations.

2. Using chains attached to the lifting eyes, it is recommended that lifting and transporting of the machine be done with an overhead hoist. Shorten the chains to allow the machine to tip back. This will allow the chains to clear the saw head and not damage the saw's surfaces. Net weight is approximately 12,000 pounds (5443.2 kg).

3. While the machine is suspended in the air, thread the provided leveling screws (M16-2.0) into each machine base foot and attach the jam nuts. Slowly lower the saw into desired position.

4. Just prior to touching the ground, place a cast iron foot pad under each of the leveling bolts. Lower the saw completely onto the foot pads.

5. Roller stock conveyors (if supplied as optional equipment) can be lifted and transported by overhead hoist, fork lift, or by other means that provides adequate safety precautions.

FLOOR INSTALLATION

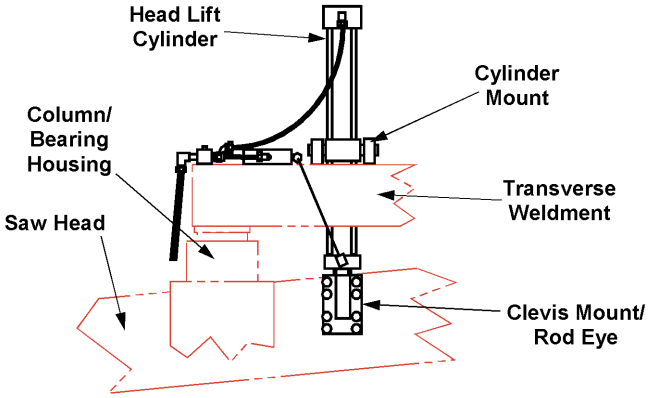
1. Connect the electric power (refer to the *"Electrical Installation"* instructions later in this section). This is done so the operator can move the hydraulic head lift cylinder.

DO NOT START THE HYDRAULICS YET.

2. Obtain the head lift cylinder and mounting brackets from the box of extra parts shipped with the machine.

3. Install the head lift cylinder on top of the traverse weldment.

When installing the head lift cylinder, safety of the installer must be a consideration during this procedure.



Head Lift Cylinder Installation.

4. Connect the two (2) hydraulic lines to the head lift cylinder.

5. Activate electrical power to the machine and start the hydraulics (refer to the *"Hydraulic Power Unit Installation"* instructions later in this section). Check for correct rotation of the hydraulic pump motor.

6. Lower the head lift cylinder and connect it to the saw head. It may be necessary to bleed these lines.

7. Raise the saw head and remove the remaining shipping blocks.

Leveling the Machine

1. There are six (6) machine leveling points: One at each corner of the base and one close to each column.

- The left column pad is located inside the hydraulic power unit enclosure and will be necessary to remove the panel to access this leveling location.

- The right column leveling pad is located inside the base through a hole in the lower right side.

- There is eight (8) leveling points with machines that have long index tables.

2. Place a machinist's level on the front vise rail and roller next of the index vise bed. Adjust the leveling screws until the machine is level and weight bears evenly on all leveling pads.

3. The following are important dimensions to be obtained during leveling:

- The roller and vise bed bearing surfaces are to be co-planar within 0.015 inch (0.38 mm) T.I.R.,or 0.0004 inch per inch (0.01 mm per mm) mearsured from the plane of the saw band to the outboard roller.

4. After the machine has been leveled, install anchoring screws next to the leveling screws at each corner of the base.

5. Install roller stock conveyor(s) if supplied as optional equipment. **These do not attach to the machine and should be anchored to the floor separately.**

ELECTRICAL INSTALLATION

Electrical installation must be made by authorized electrical maintenance personnel only!

1. Refer to the machine specifications plate on the saw head frame to verify that the electrical supply circuit will meet the voltage/phase/frequency/ amperage requirements listed. A basic data plate is reproduced on this manual's introductory page. Print the page and write the pertinent data in the spaces if desired.

2. The electrical supply to this machine must be a dedicated circuit.

Electrical Enclosures

1. It is important that you familarize yourself with the two (2) significant electrical enclosures on this machine. Each enclosure has a through the door disconnect switch.

- The main enclosure is combined with the operator's control panel on either the front of the machine or on a remote console. Power is connected to this enclosure.

- The enclosure on the machine's left rear side houses the band drive motor control.

2. The following are important disconnect precautions:

Both disconnects must be on before the machine will operate. Turning off *either* disconnect will shut down the machine.

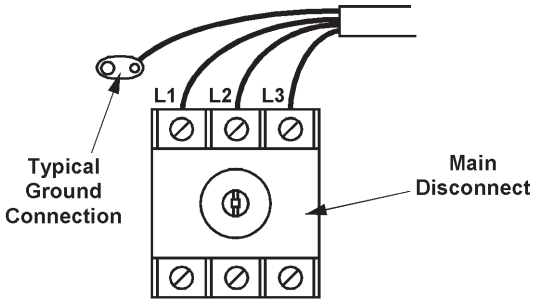
Both enclosures must be closed and the appropriate securing screws must be in place before starting machine operation.

DO NOT connect power to the band drive motor control enclosure.

3. Turn the disconnect switch on the electrical enclosure to "OFF". Then: **(a)** Loosen the screws at the right door edge and open the door; **(b)** Familiarize yourself with operation of the disconnect switch operating handle, door interlock function, switch drive dog and shaft/clamp operating positions.

4. Punch a one (1) inch (25.4 mm) diameter or larger hole in the side of the electrical enclosure. Bring power wiring (L1, L2, L3 and ground) through the hole (the cable and connector are not supplied). **DO NOT bring the power cable through any holes in the back wall. These are for installation of future accessories.**

5. Bring the power cable leads up to the disconnect switch. Then: **(a)** Connect L1, L2 and L3 to their respective terminals; **(b)** Connect the ground wire to the ground terminal (refer to the electrical schematic if necessary).



Electrical Connection to Disconnect Switch.

6. Place the operating shaft and operating handle of the disconnect switch in the “OFF” position. Then: **(a)** Close the electrical cabinet door and secure its screws; **(b)** Now turn on the electrical supply and both disconnect switches (no action will occur until the **Hydraulic Start** button on the control console has been pushed).

DO NOT start machine hydraulics until the following *“Preparation for Use”* procedures have been performed.

PREPARATION FOR USE

Flood Coolant Start-Up

1. Install the coolant reservoir on the right side of the machine. Install the coolant pump which was shipped in the extra parts box.

2. Fill the coolant reservoir with 29 gallons (109.7 liters) of oil or cutting fluid recommended by the Lubrication Chart. **DO NOT let coolant spill over and onto the floor.**

3. Check the band drive transmission reservoir level while the saw head is down. Capacity is approximately nine (9) quarts (8.5 liters).

4. Check to see that all other points listed by the Lubrication Chart have been properly serviced and/or checked.

Hydraulic Start-Up

1. Check the hydraulic reservoir fluid level. Capacity is 20 gallons (75.7 liters). If the reservoir level is low (or empty): **(a)** Check to see that the reservoir’s drain plug is installed tightly; **(b)** Fill with multi-purpose automatic transmission fluid.

2. All motors were installed and operated at the factory during assembly. If the first motor to be checked (hydraulic power unit motor) rotates correctly, the band drive motor will do likewise.

3. All hydraulic and coolant system fluid connections were leak-tested at the factory. They should be rechecked as start-up proceeds.

4. Turn on the electrical supply and turn the machine disconnect switches to the "ON" position.

See the *"Operation"* section for help on operation of the controls for the following procedure.

5. Press the green **Start Hydraulic** key on the **Operator Workstation** to start the hydraulic system. Then: **(a)** Make sure the "MANUAL" operating mode is selected (**View** screen); **(b)** Press the "SAW HEAD UP" key to raise the saw head; **(c)** If the hydraulic motor rotates correctly, the saw head will now raise from the down position.

6. If the saw head does not raise, it means that the hydraulic motor’s rotation is reversed. **Hydraulic system operation cannot be maintained if the saw head is not raised.**

7. If the saw head does not raise: **(a)** Turn the disconnect switch to "OFF" and remove power at the source of electrical supply; **(b)** Interchange two (2) of the L1, L2, or L3 leads to the disconnect switch; **(c)** Restore power and perform Step 5 again.

8. As soon as hydraulic motor rotation is correct, jog between the **Hydraulic Start** and **Hydraulic Stop** keys several times to make sure the hydraulic and coolant pumps are primed. Then allow the machine to run for several minutes to remove entrapped air.

9. If the hydraulic or band drive motor overloads open, the machine will shut down.

Machine Start-Up

Always use extreme care when handling saw bands. DO NOT attempt to remove the saw band while the band drive motor is running.

1. To remove the protective Saw Cap (if necessary) from the shipped-in-place saw band, turn the hydraulic system on, if not already running. Then: **(a)** Press the “SAW HEAD UP” until the saw band has cleared the vises and then press the "SAW HEAD HOLD" key; **(b)** If the saw head does NOT raise, make sure the machine is in "MANUAL" mode; **(c)** Turn the **Band Tension** selector to “OFF”; **(d)** Open both bandwheel covers. The Saw Cap can now be removed.

After removal, check to be sure that the saw band rides properly on the bandwheels (the back of the saw band must be up against the wheel flange).

2. With the hydraulics still running: **(a)** Turn the **Band Tension** selector to “ON”; **(b)** Close the band wheel doors; **(c)** Press the "SAW HEAD DOWN" key, **(d)** Press the "FIXED CLAMP" key to clamp the fixed vise; **(e)** Press the "BAND/CYCLE START" key.

3. Set the band speed to 40 fpm (12 m/min.) by: **(a)** Pressing the "BAND SPEED" key on the operator workstation and a keypad will appear; **(b)** Press the **"CLEAR"**, **"4"**, **"0"** and **"OK"** keys in that order. The band drive will adjust to 40 fpm (12 m/min.).

The band drive motor will not start unless: (a) Both bandwheel doors are closed; (b) The saw band has been tensioned; (c) Hydraulics are running; (d) Vises are clamped.

OPERATION

SAFETY PRECAUTIONS

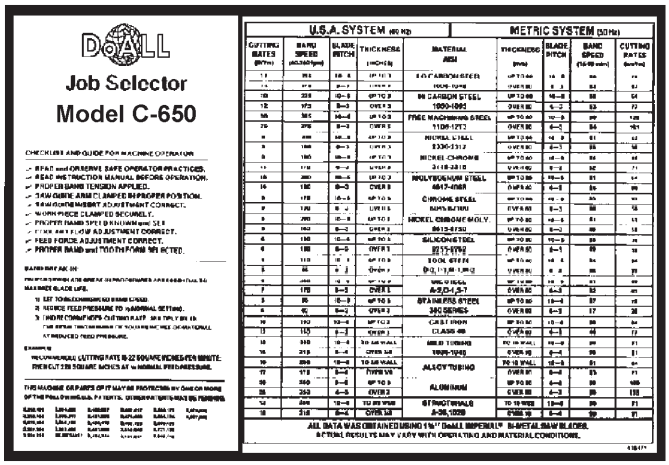
Warning Label - READ and UNDERSTAND.

USING THE JOB SELECTOR

1. Refer to the Job Selector chart on the left bandwheel door for information about the recommended blade pitch, band speed, and cutting rate. This information is listed according to type of material to be cut and its thickness. The Job Selector also has a checklist for proper machine operation and saw band break-in procedures.

2. For example: If the material to be cut is low carbon steel which is two (2) inches (50.8 mm) thick, the Job Selector recommends using: **(a)** An Imperial Bi-Metal saw blade with a blade pitch of 6; **(b)** Band speed of 315 fpm (96 m/min); and **(c)** A cutting rate of 21 square inches per minute (135 cm²/min.).

Job Selector recommendations are a general guide for correct power sawing on a properly maintained DoALL saw.



Typical Job Selector.

CONTROL CONSOLE PANEL

1. Located on the left front of the machine, the control console has the **Emergency Stop** pushbutton, **Band Tension** selector and the **Operator Workstation** to program and operate the machine.

2. **Emergency Stop.** Pushing this red mushroom head button stops all machine motors (hydraulic, coolant, band drive and chip conveyor) simultaneously.

- If the machine was operating in "MANUAL" mode before the **Emergency Stop** button was pushed: **(a)** Reset the **Emergency Stop** button by turning the button head **clockwise**; **(b)** Press the "START HYDRAULICS" key**; (c)** Press the "FIXED CLAMP' to clamp the vise; (d) Press the "BAND CYCLE START" key in sequence.

- If the machine was operating in "AUTO" mode before the **Emergency Stop** button was pushed: **(a)** Reset the **Emergency Stop** button by turning the button head **clockwise**; **(b)** Press the "START HYDRAULICS" key**; (c)** Position the stock as necessary; **(c)** Press the "FIXED CLAMP" and "INDEX CLAMP" keys to clamp the vises; (d) Press the "BAND CYCLE START" key.

3. **Band Tension.** This selector switch with "OFF", "HOLD" and "ON" settings is used when changing saw bands. **(a)** "OFF" releases saw band tension and enables saw band removal and installation; **(b)** "HOLD" stops the movement of the band tension cylinder in any position; **(c)** "ON" applies force to the band tension cylinder.

The Band Tension selector must be at "ON" before the band drive motor will start or the saw head will lower.

Other Controls

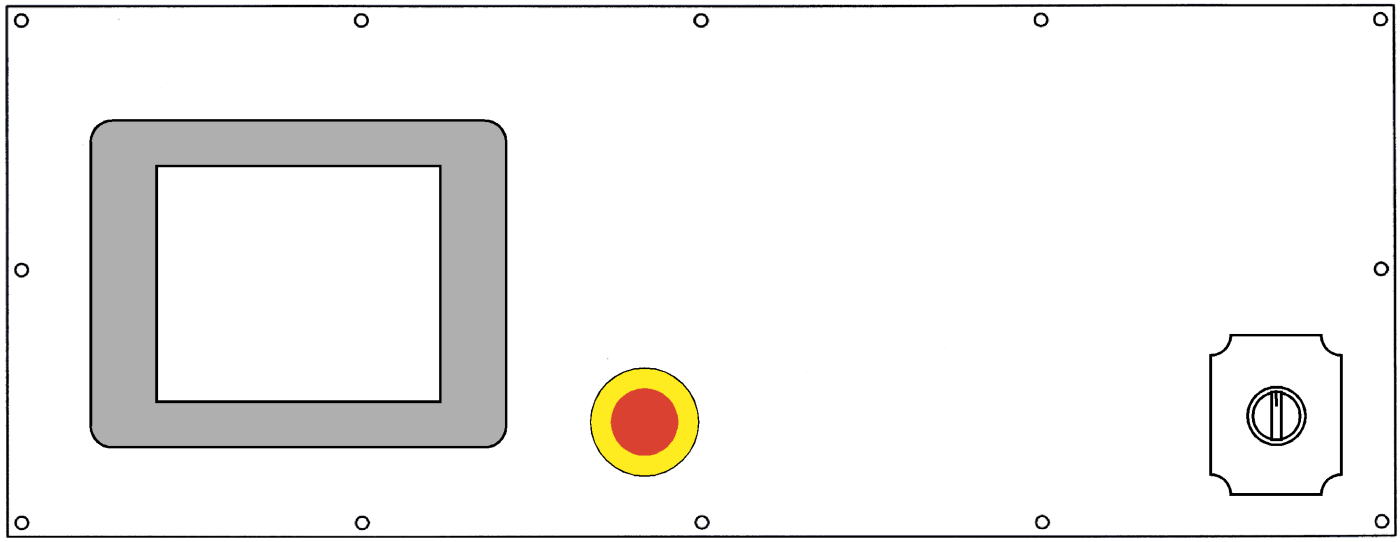
1. **Laser (Optional).** This selector switch, located below the control panel, turns the laser line generator "ON" and "OFF". Turn the laser "OFF" when not in use.

2. **Outboard Vise (Optional).** This selector switch, located below the control panel, with "OPEN", "HOLD" and "CLAMP" settings regulates outboard vise opening and closing. Stop the switch at "HOLD" if desiring to move from "OPEN" to "CLAMP" (or vice versa). **This control operates in "MANUAL" only.**

3. **Variable Vise Pressure Controls.** The two (2) control valves (located to the right of the control console) are used to adjust vise clamping force against materials which cannot tolerate full vise clamping pressure (examples are tubing, pipe, light structurals, etc.).

- Clamping pressure is set with the **Index Vise** and **Fixed Vise** knobs until the desired pressure is shown by the indicator gauges. Turn the knob **clockwise** to “increase” pressure; **counterclockwise** to “decrease” it. The working pressure range is from 200 to 500 psi (13.8 to 34.5 bar or 14.1 to 35.2 kg/cm²).

4. **Coolant.** Coolant flow to the saw guides is initiated and controlled by a vaLve near each saw guide. A valve near the inboard vise fixed jaw controls flow the cutting area. A flushing hose can be used to wash away chips and other debris from the cutting area. Turn the valves **counterclockwise** to open the coolant flow.



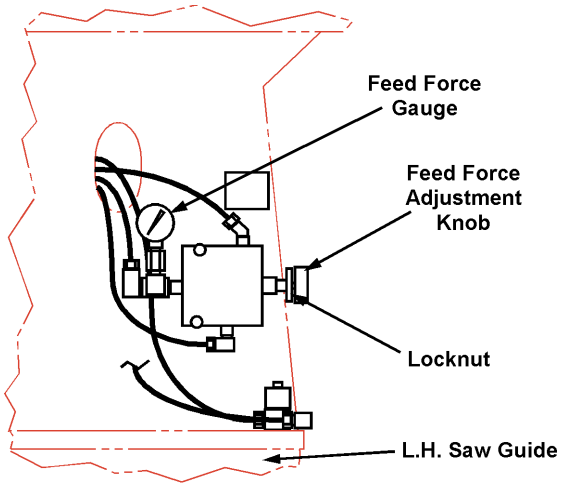
Control Console Panel.

5. **Sensing Arm.** The arm works in conjunction with the head clear limit switch **(3 LS)** to assure that the saw head has raised sufficiently above existing stock so that automatic indexing or manual stock positioning can be accomplished safely.

Hydraulic Controls

1. **Feed Force.** This valve regulates the amount of pressure being placed by the saw band against the workpiece. Turn the knob **clockwise** to "decrease" pressure; **counterclockwise** to "increase" it. The valve's lower locking knob helps maintain the setting.

2. **Feed Force Indicator.** This gauge shows the amount of pressure being placed by the saw band against the workpiece.



Hydraulic Controls.

OPERATOR WORKSTATION

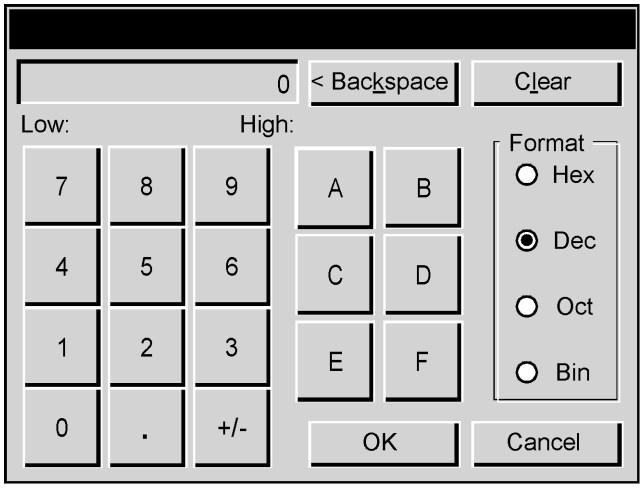
1. Most functions to control the saw are accessed with a touchscreen on the control console. The screen will display the information required to successfully operate and maintain the machine.

2. Some screens will have a **Display** area in the upper left corner of the screen to show various messages, parameters and prompts to guide you through the operation and set-up of the machine.

3. To the right of the **Display** area are three (3) keys that will take the operator to other screens.

Keypad

1. When the operator presses a key where data may be entered, a keypad will be displayed.



Keypad.

2. Features of the keypad include:

- **Display Window.** Located in the upper left corner, the display shows the values entered.

- **Backspace.** Pressing this key will delete the last entry keyed in.

- **Clear.** This will delete the entry in the display.

- **Data Limits.** Below the display window will show a "Low" and a "High" value. These values are the low and high limits of the data that can be entered for that function.

- **0 - 9, Decimal Point, + / -.** These keys are used to enter values for that function. Enter them in order including the decimal point.

If you make an error in entering data, just press the "Backspace" or "Clear" key, correct or reenter you value and then press the "OK" key.

- **OK.** Pressing this key will enter the desired data into memory and will return to the previous screen.

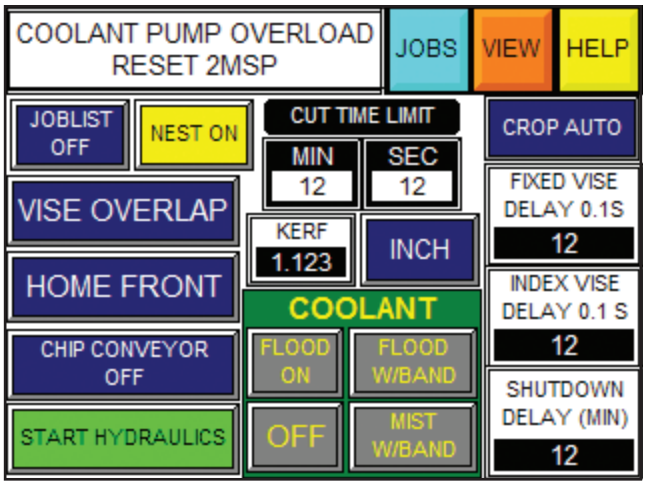
- **Cancel.** Pressing this key will bring you back to the previous screen. No data will be entered.

- **A thru F.** These keys are not functional and are not used.

"Format" is NOT to be changed for any reason. The "Dec" button should ALWAYS be selected. Any other selection will cause errors and undesireable results in setpoint values.

Setup Screen

1. This screen shows a collection of keys to set-up the parameters for the sawing operation. These parameters should be set first before the machine is operated.



Setup Screen.

2. **Joblist On/Off.** This key toggles between "ON" and "OFF" which allows a single job ("SINGLE JOB" mode) to be entered on the **View Screen** ("OFF") or a list of jobs selected from a library ("ON" or "JOBLIST" mode).

3. **Nest On/Off.** When the optional nesting vise is supplied and the operator presses "NEST ON", this selection activates the vertical clamping bar and forces the use of "VISE OVERLAP" as the vise clamp mode. Pressing "NEST OFF" deactivates the vertical clamping bar. The operator still has the option of vise overlap.

4. **Vise Overlap/No Overlap.** This key toggles between "VISE OVERLAP" and "NO OVERLAP" which allows the operator to change the time gap between index vise opening and fixed vise closing.

- VISE OVERLAP**.** After the fixed vise jaws clamp, there is a time lapses before the index vise jaws open. This selection is forced if “NESTING ON” is selected. The best accuracy is obtained when “VISE OVERLAP” is selected because the material is always clamped by one of the vises

- NO OVERLAP. After the index has moved forward, the index vise jaws open at the same time as the fixed vise jaws close. This selection allows slightly faster operation because both vises are cycled at the same time. This selection also allows material that has a tendency to “climb” in the vises to fall back to the vise bed.

The first time user is advised to select the “NO OVERLAP” setting.

5. **Home Front/Rear.** This key toggles between "HOME FRONT" and "HOME REAR" and allows the operator to determine the position of the index vise during the sawing operation.

- "HOME FRONT" is preferred when using the nesting fixture and may be valuable when using variable vise pressure. It allows the use of two (2) vises to provide extra clamping. Operating sequence is as follows: When a cut has been completed, the index vise jaws open, the index moves to the required dimension and transfers the stock.

- "HOME REAR" is the shortest cycle time and is preferred for most operations when not using the nesting fixture or variable vise pressure. Operating sequence is as follows: While a cut is being made, the index vise (with vise jaws open) moves to the rear to position itself for the next index stroke; when the cut is completed, the index vise jaws close, the fixed vise jaws open, and the index transfers the material into cutting position. When the last part in a job is being cut, the index will remain forward until the next job has been started.

6. **Chip Conveyor On/Off.** This key turns the chip conveyor "ON" or "OFF". It is recommended that the chip conveyor is "ON" when the machine is sawing.

Hydraulics MUST be "ON" before the chip conveyor will operate.

7. **Start/Stop Hydraulics.** Press this green key to start the hydraulic pump and coolant pump motors (the button will turn to red when the hydraulics are operating).

- The following conditions must exist before trying to start the hydraulics: **(a)** The **Emergency Stop** pushbutton is reset (turn **clockwise**); **(b)** Both disconnect switches are "ON".

Lower the saw head completely when the hydraulic pump is to be shut down for an extended period of time (such as overnight).

8. **Cut Time Limit.** This key permits the operator to program a maximum cut time limit in minutes and seconds. The keypad will appear when pressed. Enter the cut time setpoint for minutes and seconds. Press **OK**.

- A running **Cut Time** value or the previous cut time will be displayed on the **View Screen** while the machine is in operation.

9. **Kerf Width.** Allows the operator to change the kerf width measurements of the saw band. Press this key and the keypad will appear. Enter the kerf width of the saw band being used. Press **OK**.

10. **Inch/Metric Units.** This key toggles between "INCH" and "METRIC" (mm) and allows the operator to convert operating parameters between inches and millimeters.

11. **Coolant.** There is four (4) options in selecting the coolant mode.

- **(a)** "FLOOD ON" allows the coolant system to operate without the band drive motor running; **(b)** "FLOOD W/BAND" allows the coolant system to operate when the band drive motor is running; **(c)** "MIST W/BAND" is used for the optional mist lubricator system; **(d)** "OFF" turns off both coolant mode systems.

12. **Crop Auto/Off.** This key toggles to will allow the operator to have a crop cut at the beginning of a job ("AUTO") or no crop cut ("OFF").

- When "JOBLIST OFF" is active, the machine will have a crop cut at the beginning of the single job.

- When "JOBLIST ON" is active, the machine will have one (1) crop cut at the beginning of the first job and proceed with the rest of the jobs on the list without an additional crop cut being made.

13. **Fixed/Index Vise Delay.** This sets the time for the vises to clamp before the next sequence of operation begins. The time is dependent on options supplied. Press this key and the keypad will appear. Enter the vise time delay setpoint in tenths of a second for each vise. Press **OK**. The setpoint range is from 0.3 to 9.9 seconds.

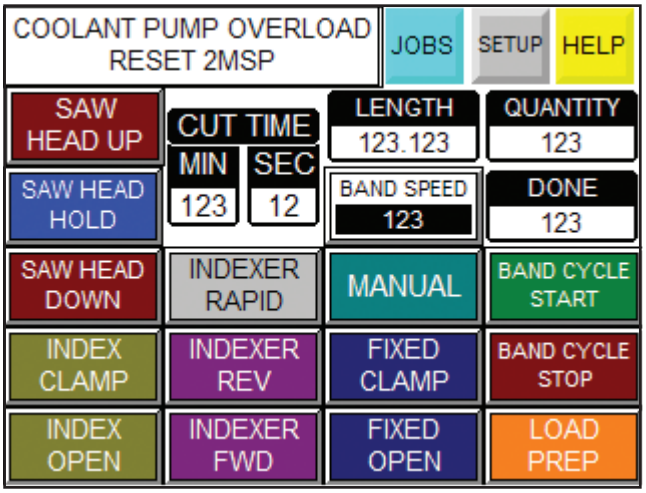
14. **Shutdown Delay.** When the machine has been inactive for certain amount of time, the machine will shutdown. Press this key and the keypad will appear. Enter the desired shutdown time setpoint in minutes and seconds. Press **OK**. The time limit range is 0 to 50 minutes.

9. Press the **View Screen** key in the upper right area of the screen for more controls.

<u>View Screen</u>

1. This screen shows a collection of keys to manually operate the machine and setup parameters for automatic operation.

For the saw head and vise functions to operate, the hydraulics MUST be "ON" and the operation in the "MANUAL" mode.



View Screen.

2. Saw **Head Up.** Press this key to raise the saw head. The saw head will stop when it reaches the maximum up limit switch or until the "SAW HEAD HOLD" or "SAW HEAD DOWN" key is pressed.

3. **Saw Head Hold.** This key stops all saw head movement.

4. **Head Down.** Press and hold this key to lower the saw head.

5. **Index Clamp.** Press this key to clamp the index vise movable jaw.

6. **Index Open.** Pressing and holding this key opens the index vise movable jaw. Releasing the key stops vise jaw movement.

7. **Cut Time.** This displays the previous cut time or the current running cut time during a cut. Changing the **Cut Time Limit** is done on the **Setup Screen**.

8. **Indexer Rapid/Creep.** This key toggles between "INDEXER RAPID" or "INDEXER CREEP" is used to increase or decrease the index rate of travel of the indexer when the "INDEXER REV" or "INDEXER FWD" keys are activated.

9. **Index Rev (Reverse).** Press and hold this key causes the index vise to move away from the saw band toward the rear of the feed table. Releasing the key stops index vise motion.

- Operation notes: **(a)** When the key is pressed, the indexer moves at the selected "RAPID" or "CREEP" speed; **(b)** The index will not move if the fixed and index vise jaws are both clamped.

10. **Index Fwd (Forward).** Press and hold this key causes the index vise to move forward towards the saw band. Releasing the key stops index vise motion.

- Operation notes: **(a)** When the key is pressed, the indexer moves at the selected "RAPID" or "CREEP" speed; **(b)** The index will not move if the fixed and index vise jaws are both clamped.

11. **Length, Quantity, Done.** With the "JOBLIST OFF", these keys are used to program a single job. With the "JOBLIST ON", it is a display only of the current job be processed during the automatic cycle.

- Press the "LENGTH" key and a keypad appears. Enter the index length to be cut and then press **OK**. The maximum length to be entered is 9999.999 units. Minimum length is .25 units.

- Press the "QUANTITY" key and a keypad appears. Enter the number of cuts desired and then press **OK**. The maximum quantity to be entered is 999.

- "DONE" displays the number of cuts completed. Press the "DONE" key and enter zero (0) to clear the field a single job mode.

12. **Band Speed.** Press this key and the keypad will appear. Enter the desired band speed and then press **OK**. The band speed can be changed at any time **only when the saw band is running**.

13. **Manual/Auto Mode.** This key shows the current operating mode of the saw. Press the key will switch between "AUTO" and "MANUAL" modes.

- In "MANUAL", the saw band will stop and saw head will remain in the down position at the end of the cut.

For the saw head and vise functions to operate, the hydraulics MUST be "ON" and the operation in the "MANUAL" mode.

- In "AUTO", the saw band will stop and saw head will raise until it clears the material.

14. **Fixed Clamp.** Press this key to clamp the fixed vise movable jaw during manual operation.

15. **Fixed Open.** Pressing and holding this key opens the fixed vise movable jaw. Releasing the key stops vise jaw movement.

16. **Band/Cycle Start.** Press this green key to start the band drive motor. The control system allows the motor to accelerate to operating speed before starting a cut.

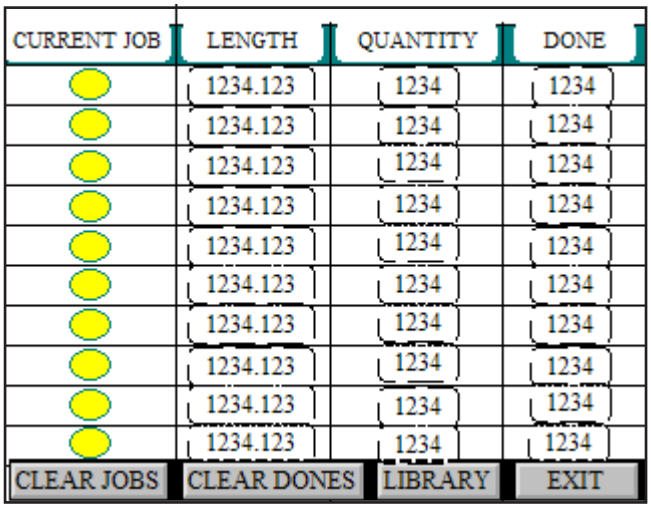
- The following conditions must exist before pressing the "BAND CYCLE START" key: **(a)** Hydraulics must be on; **(b)** All doors and covers must be closed; **(c)** A saw band must be installed and the **Band Tension** selector must be at “ON”; **(d)** There must be no band drive fault (malfunction or overload of the band drive inverter).

17. **Band/Cycle Stop.** Push this red key to stop the band drive motor.

18. **Load Prep.** This key is used to prepare the machine for material loading. Press this key to start a cycle which: **(a)** Raises the saw head completely; **(b)** Moves the indexer completely forward (toward the saw band); **(c)** Opens the fixed and index vise jaws fully.

Jobs Screen

1. This screen allows the operator to select up to ten (10) jobs from a editable job library containing twenty (20) programmed jobs.



Job List Screen.

2. **Clear Jobs.** Pressing this key clears all job data on the list. This does not clear the jobs listed in the library.

3. **Clear Dones.** Pressing this key clears the "DONES" on the list.

- If the "JOBLIST" is "OFF" and operating mode is "MANUAL", you can edit the dones in the **View Screen**.

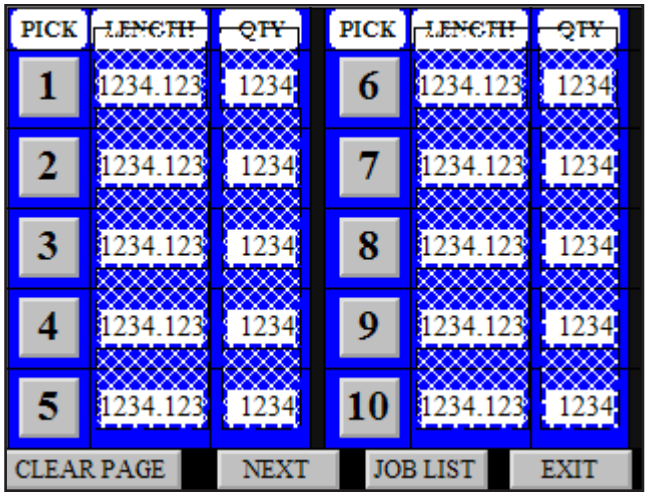
4. **Library.** Pressing this key will take you to the **Job Library Edit Screens**.

5. Exit. Press this key will take you back to the **View Screen**.

6. A yellow dot indicates the current job being cut.

- There are two (2) **Job Library Edit Screens**, the first screen is for jobs 1 thru 10 and the second screen is for jobs 11 thru 20.

Job Library Edit Screens



Job Library Edit Screen (Jobs 1 thru 10 Shown).

1. **Clear Page.** Pressing this key clears all data on this screen.

2. **Next.** Pressing this screen takes you to **Job Library Edit Screen** for jobs 11 thru 20. Press "BACK" to return to the first library screen.

3. **Job List.** Press this key will take you to the **Job List Screen**.

4. **Exit.** Press this key will take you back to the **View Screen**.

5. To program a job, press the "LENGTH" field at a pick location and a keypad appears. Enter the index length to be cut and then press **OK**. The maximum length to be entered is 9999.999 units. Minimum length is .25 units.

- Next press the "QUANTITY" field of job #1 and a keypad appears. Enter the number of cuts desired and then press **OK**. The maximum quantity to be entered is 999.

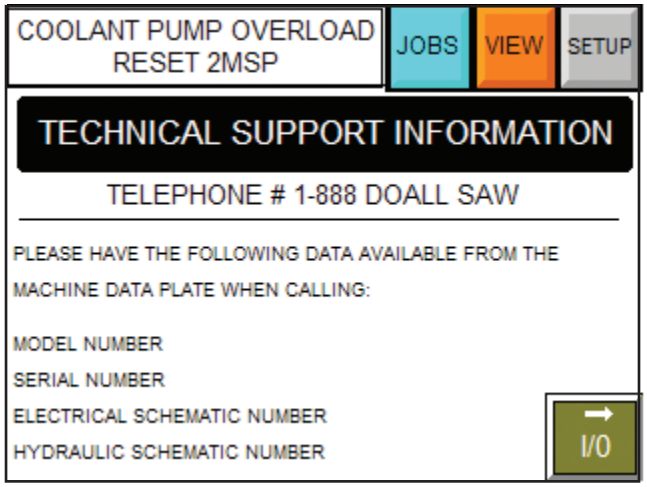
6. Press "NEXT" if more than ten (10) jobs are to be added to the library. Continue entering data for all jobs desired. Press "EXIT" when finished entering data.

7. To create a job list, press the job number under the "PICK" column in the order you want the jobs to run. You can select jobs from both screens but no more than ten (10) jobs for the list. Jobs may be selected more than once.

Jobs with a "0" (zero) in the "LENGTH" and/or QUANTITY" fields will NOT be entered into the job list.

Help Screen

1. This screen shows information you need before calling for technical support. The information can be found on the data plate mounted to the base of the machine.



Help Screen.

2. **I/O Screens #1, #2, #3.** These screens shows different PLC modules and their status. These screens are for diagnostics and service only and **needs NO interaction from the operator**.

Error Messages

1. Error conditions requiring operator attention flash a message on the **Display**.

2. **Proper corrective action by the operator must be made for machine operation to resume.**

OPERATOR WORKSTATION (Continued....)

3. Error messages, their cause and required corrective action are as follows:

- **BAND STALLED. Cause:** The saw band has stalled in the stock usually indicating that feed force is too heavy. **Correction: (a)** Reduce the **Feed Force** setting or increase the **Band Speed** setting; **(b)** Push the **Band Cycle Start** key; **(c)** Slowly reenter or resume the cut.

- **BROKEN BAND. Cause:** The saw band has broken and requires replacement. **Correction: (a)** Slowly jog the saw head from the cut and raise it to maximum height; **(b)** Install a new saw band; **(c)** Push the **Band Cycle Start** key; **(d)** Slowly lower the saw head and re-enter the cut.

- **BAND DOOR(S) OPEN. Cause**: One (1) or both bandwheel doors is not closed tightly. **Correction:** Be sure both bandwheel doors are closed tightly.

- **OUT OF STOCK. Cause:** Stock is too short for further automatic index feed. **Correction: (a)** Press the key to get to the "MANUAL" to leave automatic operating mode; **(b)** Raise the saw head; **(c)** Place new stock on the indexer.

- **CUT TIME LIMIT EXCEEDED. Cause:** Time taken to make the cut is greater than the programmed cut time. **Correction: (a)** The saw band may be dull and requires replacement; **(b)** Feed force being used is not sufficient; **(c)** Restart the automatic cycle.

- **BAND DRIVE VFD FAULT. Cause:** An overload condition of the band drive motor. **Correction: (a)** Turn the disconnect switch to "OFF"; **(b)** Reset the VFD overload switch; **(c)** Press the **Band Cycle Start** key; **(c)** Press the "SAW HEAD DOWN" key.

- **HYDRAULIC PUMP OVERLOAD (1 MSP). Cause:** Hydraulic pump motor overload switch has tripped. **Correction: (a)** Turn the disconnect switch to "OFF"; **(b)** Open the electrical panel on the front of the control console; **(c)** Remove the cause of the overload; **(d)** Push motor starter reset button; **(e)** Close the electrical panel; **(f)** Turn the disconnect switch to "ON".

- **COOLANT PUMP OVERLOAD (2 MSP). Cause:** Coolant pump motor overload switch has tripped. **Correction: (a)** Turn the disconnect switch to "OFF"; **(b)** Open the electrical panel on the front of the control console; **(c)** Remove the cause of the overload; **(d)** Push motor starter reset button; **(e)** Close the electrical panel; **(f)** Turn the disconnect switch to "ON".

4. Several other status messages are displayed: **(a)** CROP CUT IN PROCESS; **(b)** LOAD PREP IN PROCESS; **(c)** ALL JOBS COMPLETE.

5. The display will prompt the operator with the next step in the process to continue.

SAW BAND PREPARATION

Cutting Capacity and Saw Band Recommendations

1. The machine's standard cutting capacity for rectangular stock is 25.00 inches (650 mm) high by 25.00 inches (650 mm) wide. It will also cut round stock (solids, tubing, pipe, etc.) up to 26.00 inches (670 mm) in diameter. Cutting capacity may vary with the addition of accessories. Any variation will be noted when applicable.

2. A high-speed DoALL Imperial Bi-Metal 100 saw band with protective Saw Cap is supplied with the machine. Band length is 300 inches (7620 mm); width is 2.12 inches (54 mm) with a recommended gage of 0.063 inch (1.6 mm).

3. A machine in correct adjustment, good operating condition and using proper cutting fluid is essential to efficient sawing.

4. Proper blade care should include: **(a)** Pushing uncut stock away from the saw band and lowering the saw head if the machine is to remain idle for a period of time; **(b)** Using correct band speed, feed force and cutting fluids during operation; **(c)** Removing scale from stock before sawing; **(d)** Keeping the protective Saw Cap over blade teeth until installation time.

Blade Guards

1. The machine has three (3) blade-covering guards for operator safety. **All guards must be in place before any sawing procedure is started.**

2. **Left Guard**. This guard is attached to the left saw guide arm and extends toward the idler bandwheel.

3. **Right Guard.** This guard extends between the right saw guide arm and the drive bandwheel.

4. **Top Channel Guards.** This guard is part of the head beam and located between the bandwheels doors.

DO NOT defeat the purpose of any guard or safety devise. They are there for YOUR PROTECTION!

SAW BAND PREPARATION (Continued....)

Saw Band Removal

Always use extreme care when handling saw bands. Wear gloves.

1. Push the "START HYDRAULICS" key and press the "SAW HEAD UP" key. Then: **(a)** Raise the saw head to allow both bandwheel doors to be opened; **(b)** Press the "SAW HEAD HOLD" key. **(c)** Clamp the fixed vise and press the "BAND CYLE START" key (this moves the left saw guide to the center of the saw).

2. Press the "BAND CYLE STOP" key. Next: **(a)** Turn the **Band Tension** selector to "OFF" (this moves the idler bandwheel to the right and releases the saw guides); **(b)** Open both bandwheel doors; **(c)** Loosen the clamping handle on the powered band brush assembly; **(d)** Swing the band brush away from the blade teeth.

3. Place a gloved hand on the back of the saw band portion between the saw guides; **(b)** Push the saw band down and out to disengage it from the saw guides **(you will want to grip the saw band firmly as you manipulate it); (c)** Remove the saw band from around the drive and idler bandwheels, then its top channel guide.

4. Grasp the upper and lower portions of the saw band loop at approximately the center.

5. Maneuver the drive wheel end loop of the saw band outward and to the left while maneuvering the idler wheel end loop between the idler wheel and right blade guard. Then: **(a)** Recoil the saw band and dispose of it immediately.

Saw Band Installation

Always use extreme care when handling saw bands. Wear gloves. Obviously, DO NOT attempt to change saw bands while the band drive motor is running.

1. Carefully follow all *"Band Removal"* procedures above. Then: **(a)** Use the **Flushing Hose** to clean areas around the saw guides, plus the drive and idler bandwheels.

2. Slip the loop of the saw band under both saw guide by following the reverse procedure of (4) in the *"Saw Band Removal"* section. Then: **(a)** Position the saw band around the drive and idler bandwheels; **(b)** If necessary, remove the Saw Cap from the saw band.

3. Slip the top portion of the saw band loop into the top channel guard. Then: **(a)** Turn the **Band Tension** selector to "ON" until the lower portion of the saw band loop is one (1) inch (25 mm) below the saw guides; **(b)** Turn the **Band Tension** selector to "HOLD" and push the **Stop Hydraulics** key.

4. Grasp the saw band portion between the saw guides and twist it so the blade teeth are pointing downward; **(a)** Slip the twisted saw band portion up between the saw guide rollers and inserts.

5. Check the saw band's position around both bandwheels (its back edge must rest against each wheel's rear flange). When satisified that saw band positioning is correct: **(a)** Close both bandwheel doors; **(b)** Push the **Start Hydraulics** key; **(c)** Turn the **Band Tension** selector to "ON".

6. Reposition the band brush (if necessary) and tighten the two (2) clamp screws (brush bristles should clean the teeth gullets, but not contact the bottom of the gullets). Then: **(a)** Jog the band drive motor; **(b)** Open each bandwheel door to make certain that the saw band is against the bandwheel flanges.

FEED FORCE ADJUSTMENT

1. Feed force is the pressure exerted by the workpiece against the saw band's cutting edge. It is controlled hydraulically and regulated with the **Feed Force** valve. It is located above the left hand saw guide.

2. The following are important factors to consider when setting or adjusting the **Feed Force** valve:

- Turn the **Feed Force** valve to a **low** setting if the correct feed force is not known. The operator can then increase or decrease pressure during operation to obtain the best cutting rate consistent with desired blade life and stock cut finish. **Always be sure to take a good chip.**

- **Never** start a cut with the maximum **Feed Force** valve setting. Blade damage may occur.

- Certain work-hardening materials will require a **moderately heavy** initial **Feed Force** valve setting to assure immediate penetration of blade teeth. Light feeds on these materials may cause the blade to slide over the stock resulting in saw band damage.

- Generally, top performance from a sharp saw band results from **relatively low Feed Force** valve settings. It will be necessary to increase the setting as the saw band becomes duller. This will help keep the cutting rate constant throughout the life of the saw band.

FEED FORCE ADJUSTMENT (Continued....)

- Feed force adjustments are not necessary for changing stock cross-sections. A balancing valve enables the saw band to maintain a uniform cutting rate.

Reducing Cutting Rate & Band Speed for Pipe, Tubing and Structurals

1. Increasing loading per tooth occurs when sawing thin stock sections. Although the blade teeth can bear some overloading, a cutting rate reduction must be made.

2. Proceed as follows when it becomes necessary to modify solid section sawing recommendations: **(a)** Measure the thinnest stock section to be cut; **(b)** Apply the corresponding percentage factor from the following chart; **(c)** Use a high band speed, but **never exceed the maximum speed recommended for stock sections of the same size.**

SECTION THICKNESS	FACTOR TO APPLY TO MINIMUM CUTTING RATES GIVEN BY JOB SELECTOR*
Up to 3/16 inch (0 to 4.8 mm)	40%
3/16 to 3/8 inch (4.8 to 9.5 mm)	50%
3/8 to 5/8 inch (9.5 to 15.9 mm)	60%
5/8 to 1 inch &over (15.9 to 25 mm & over)	70%

*Based on 5 inch (127.0 mm) solids.

Cutting Rate to Thickness Relationship.

AUTOMATIC HEAD ELEVATION (Auto Mode Only)

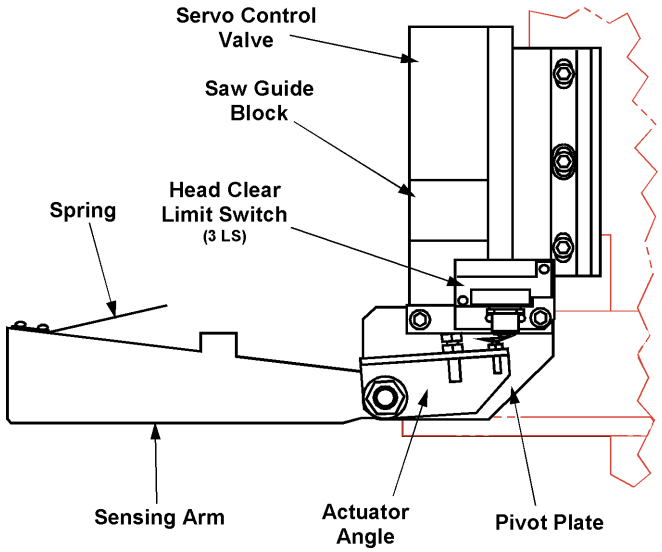
Head Elevation

1. Saw head elevation during automatic sawing cycle is initiated when the head down limit switch **(2 LS)** is actuated. The saw head then raises to a height determined by the sensing arm.

2. After a cut has been made in the manual operating mode, the actuated head down limit switch **(2 LS)** stops machine operation. To lift the saw head off the limit switch and resume operation, the operator must; **(a)** Move the **Saw Head Control** selector to "up"; **(b)** Push the **Hydraulic Start** button.

Sensing Arm Operation When the Saw Head Raises

1. The saw head lifts the sensing arm above the stock at a rapid rate (there is no slow head raising rate) until it actuates the head clear limit switch **(3 LS)**. This causes saw head upward movement to stop when the blade is approximately one half inch (12.7 mm) above the stock. This clearance anticipates potentially crooked and/or out-of-round stock being used.



Right Saw Guide With Sensing Arm.

2. If operating in automatic mode: **(a)** The fixed vise then unclamps; **(b)** The index vise clamps; **(c)** Stock is indexed forward, the fixed vise clamps and the index vise unclamps.

3. When the fixed vise unclamps prior to indexing, its jaws open just enough to allow stock advancement. The vise jaws can be opened wider only when the saw head has been manually raised to the full "up" position to actuate the head up limit switch **(9 LS)**.

Operation When the Saw Head Lowers

1. The saw head lowers at the rapid approach rate until stock is contacted by the sensing arm. A feed approach rate is then established and cutting begins.

AUTOMATIC HEAD ELEVATION (Auto Mode Only) (Continued....)

2. Sensing arm contact with the stock is maintained throughout the cut. After a cut has been finished: **(a)** The head down limit switch **(2 LS)** is actuated; **(b)** The saw head raises.

MINIMUM BAR END VISE

1. When the indexing vise is completely forward, both of its vise jaws extend toward the front vise jaws. This extension, together with the nesting design of the vises, permits automatic indexing of stock until a small butt end remains.

2. The minimum butt end length of stock that can be indexed is 12.50 inches (317.5 mm). If the stock is shorter, it will not be stable in the index vise.

3. If the vertical hold down option is used, the minimum indexable stock length is 16.50 inches (419.1 mm).

HYDRAULIC SYSTEM

1. The hydraulic and band drive systems operate independently. This allows the operator to perform the following tasks while the band drive motor is **not running**: **(a)** Change saw bands; **(b)** Raise or lower the sawing head; **(c)** Clamp or unclamp the vises; **(d)** Position stock manually.

2. The machine's hydraulic reservoir has a 20 gallon (75.7 liter) capacity. Refer to the Lubrication section of this manual for recommended oils.

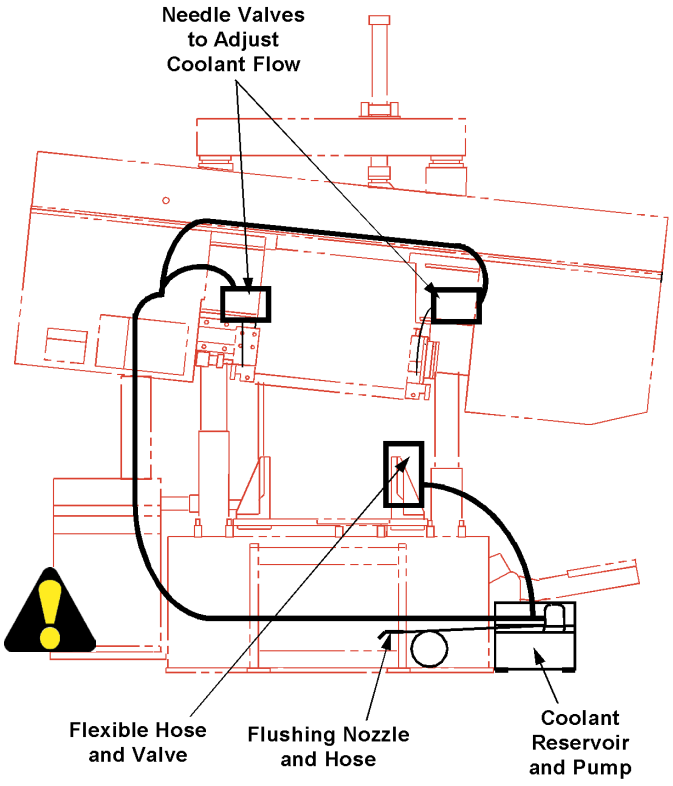
COOLANT SYSTEM

Coolant Selection

1. The main cause of tooth failure during band machining is excessive heat build-up. Using the proper cutting fluid reduces the heat generated during operation. It also helps the machine take full advantage of its high-speed steel saw bands.

Literature describing these and other coolant types is available from your DoALL sales representative.

Coolant Application



Coolant Application Points.

1. Coolant is applied as follows during sawing:

- To the saw band and cutting area through the saw guide inserts. Flow is regulated by a valve on each saw guide arm.

- To the cutting area through a flexible hose and nozzle. Flow from this point should cover the cutting area completely and is controlled by a needle valve.

2. Coolant flow is started by: **(a)** Pushing the **Hydraulic Start** button; **(b)** Turning the **Coolant** selector to "ON"; **(c)** Turning the coolant valve on each saw guide arm **counterclockwise** until fluid completely shrouds the saw band.

DO NOT start cutting until coolant is flowing adequately. Dry cutting will greatly reduce blade life.

3. Check the coolant reservoir level if flow is stopped or reduced. Reservoir capacity is 29 gallons (109.7 liters).

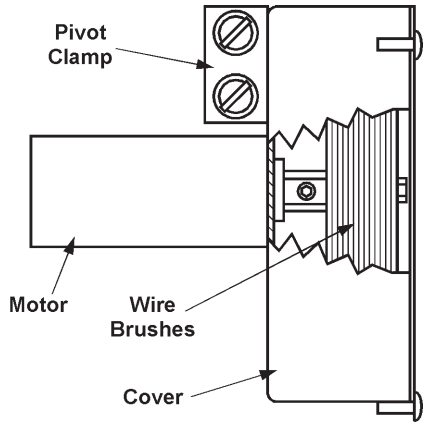
CHIP REMOVAL

1. Metal chips should be removed from the work area as soon as possible. They can be washed, scraped, or scooped out with the supplied shovel-rake.

DO NOT shovel or rake chips while the saw band is running.

Band Brush

1. A covered, hydraulic motor driven band brush is located near the drive bandwheel. During machine operation, the brush bristles should be positioned so that the tips clean chips from the blade teeth gullets, but do not contact the bottom of the gullets. **DO NOT allow metal chips to accumulate on the brush.**



Band Brush.

2. As the bristles wear, move the brush closer to the blade. To do so: **(a)** Open the right bandwheel door; **(b)** Loosen the clamping handle; **(c)** Position the brush for correct blade cleaning; **(d)** Tighten the clamping handle and close the bandwheel door.

Flushing Hose

1. Metal chips and other debris may accumulate over time around such machine areas as: saw guides, drive and idler bandwheels, vises, slides, brush housing, head lift ram, feed and discharge areas, etc.

2. The operator should check often for metal chip collections which can adversely affect machine performance. They should be removed with the Flushing Hose as soon as possible.

The DoALL Company recommends using the Flushing Hose to remove chips at least twice per each eight (8) hour shift, and more often with heavier use.

Shovel-Rake

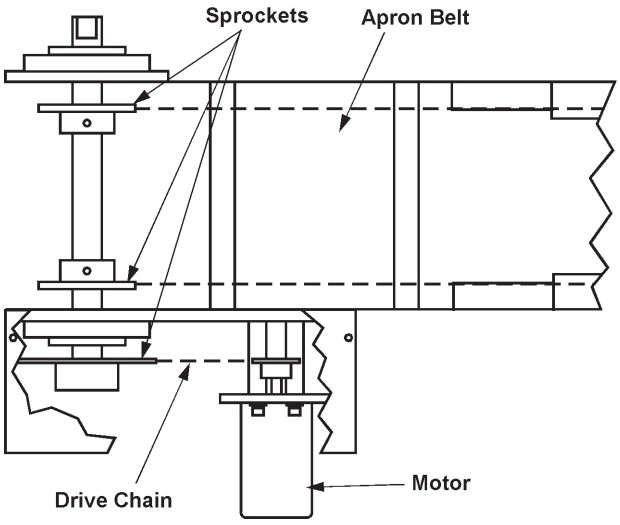
1. Accumulations of metal chips can be removed from the machine with the shovel-rake.

DO NOT use the shovel-rake while the saw band is running.

Combination Shovel-Rake.

Chip Conveyor

1. During operation, metal chips and used coolant drop directly into a sloped trough, or flow into it from the machine's run-off surfaces. Coolant then flows down the trough and through a filtering screen before returning to the reservoir.



Chip Conveyor - Top View.

2. The chip conveyor motor operates simultaneously with the hydraulic pump motor. The conveyor apron moves slowly at the bottom of the trough. Its movement carries metal chips to the opening at the machine's right side where chips empty into a customer-supplied container.

3. A valve located on the top valve port of the hydraulic power unit allows the chip conveyor motor to be adjusted for faster or slower operation.

IDLER WHEEL MOTION DETECTOR (1 PRS)

1. This safety devise located on the saw head plate behind the idler bandwheel stops the machine if the saw band should break or stall in the workpiece. Always determine the cause of the stoppage and correct it before attempting to resume operation.

TYPICAL OPERATING PROCEDURES

Manual Operation

1. To start the machine: **(a)** Make sure the disconnect switches is turned to "ON"; **(b)** Turn the **Emergency Stop** button **clockwise** to reset; **(c)** Press the "CROP AUTO" if a crop cut is desired; **(d)** Press the **Start Hydraulics** key. This will start the hydraulic pump.

2. When the machine is ready for operation, the **Display** will show the a message to indicate readiness to accept manual input, or to be set-up for automatic operation.

3. Push the **Load Prep** key and the following actions will occur: **(a)** Saw head moves to the maximum raised position; **(b)** The index and fixed vises open completely; **(c)** The indexer moves completely forward.

- **Operating Notes: (a)** The saw head must be raised completely to allow complete opening of the vise jaws, or to accomodate a stockpiece wider than the piece previously clamped; **(b)** If the saw head is not completely raised, the vises will open just slightly wider than the previous stockpiece.

4. Load stock onto the feed table and position the stock to be cut (a crop cut if desired).

5. To move the stock into position for clamping by the fixed vise jaws: **(a)** Move the index vise to the rear or almost to the rear of its travel; **(b)** Clamp the index vise jaws and open the fixed vise jaws; **(c)** Use the "INDEX FORWARD" or "INDEX REVERSE" keys to position the stock (for a crop cut, 1/4 inch (6.3 mm) or more of material must be extending beyond the path of the saw band).

- **Operating Notes: (a)** The index will move according to what is selected from the "INDEXER" key ("RAPID" or "CREEP") after the "INDEX FORWARD" or "INDEX REVERSE" key has been pressed.

6. Press the "FIXED CLAMP" key to clamp the fixed vise jaws around the stock. Then: **(a)** Press and hold the "SAW HEAD DOWN" key to position the saw band just above the stock; **(b)** Release the "SAW HEAD DOWN" key.

7. Press the "BAND SPEED" key. Enter the desired band speed and press **OK**.

8. Select the coolant flow desired for your application. Make sure to cover both sides of the saw band.

9. Make sure the "JOBLIST" is "OFF". On the **View Screen**, enter the "LENGTH", "QUANTITY" and "DONES".

10. Press the "BAND CYCLE START" key. The band drive will come up to speed and the saw head will feed down to begin the cut.

11. As the saw head begins to lower, turn the **Feed Force** knob until the proper pressure is shown by the **Feed Force Indicator** (feed force range is from "1" (lowest) to "9" (greatest).

12. The operator may adjust band speed, coolant flow, rapid approach rate, and/or feed force at any time during the sawing process.

11. After the job has been completed, an "JOB(S) COMPLETE PRESS TO CONTINUE" message will appear. Press the display window to continue.

12. The saw band will shut off with the saw head in the down position. Then: **(a)** Raise the saw head by pressing the "SAW HEAD UP" key (press the"SAW HEAD HOLD" key when the desired saw head height is reached); **(b)** Unclamp the index and fixed vise jaws; **(c)** Remove the cut-off piece.

Automatic Operation Preview

1. Automatic machine operation allows the processing of a single job up to 999 cuts. When the programmed jobs have been completed: **(a)** An "JOB(S) COMPLETE PRESS TO CONTINUE" message will appear. Press the display window to continue; **(b)** The band drive motor will shut off.

Automatic Operation

1. Start the machine by following steps 1 through 8 from the preceding *"Manual Operation"* section.

2. Enter job information on the **Job Library Edit Screen**. The operator must enter length of cut and number of cuts information for that job.

3. Select the jobs to add to the **Job List Screen**.

Be sure that both the index and fixed vise jaws are clamped.

4. Make sure that "AUTO" mode is selected.

5. With the material now in position: **(a)** Clamp the index vise jaws, then clamp the fixed vise jaws; **(b)** Press the "AUTO" key. **(c)** Press the "BAND CYCLE START" key.

6. If the indexer position is set to "HOME FRONT"**,** the index vise will remain near the saw band and be clamped. After the cut has been completed: **(a)** The index will move back to the cut length and clamp; **(b)** The fixed vise jaws will open; **(c)** The index will move the piece forward; **(d)** The fixed vise jaws will clamp and a cut will be started.

7. If the indexer position is set to "HOME REAR"**,** the index vise will move back to the cut length and remain open for the duration of the cut. Then: **(a)** The index vise jaws will clamp and the fixed vise jaws will open; **(b)** The index will move the workpiece forward; **(c)** The fixed vise jaws will clamp and a cut will be started.

8. After the job have been completed: **(a)** An "JOB(S) COMPLETE PRESS TO CONTINUE" message will appear. Press the display window to continue; **(b)** The band drive motor will shut off.

Important Automatic Cycle Operating Reminders

1. The operator may adjust band speed, coolant flow, approach rate, and feed force at any time during the sawing process.

2. During automatic cycle, control of the machine starts when the "AUTO" key is pushed. The only way to turn "AUTO" off is to push the key again.

3. To run the job in automatic cycle: **(a)** The index vise must be forward (near the saw band); **(b)** Stock to be cut must be clamped by both vises; **(c)** The job to be cut must be entered; **(d)** Push the "AUTO" key; **(e)** Press the "BAND CYCLE START" key.

The operator CANNOT edit the job being cut while the machine is running.

5. The operator may interrupt a job at any time and return later to complete it.

6. When the requested number of cuts have been made in a job and the operator wishes to repeat that job, proceed as follows: **(a)** Turn the automatic cycle off by pushing the "AUTO" key; **(b)** Press the "CLEAR DONES" key if in the "JOBLIST" mode or set "DONES" to zero (0) in "SINGLE JOB" mode; **(c)** Reenter the desired quanity.

DO NOT remove any cut-off pieces until they are away from the saw band or the saw band has stopped completely.

For future reference, keep a record of band speed, feed rate, feed force and coolant application settings for successful jobs.

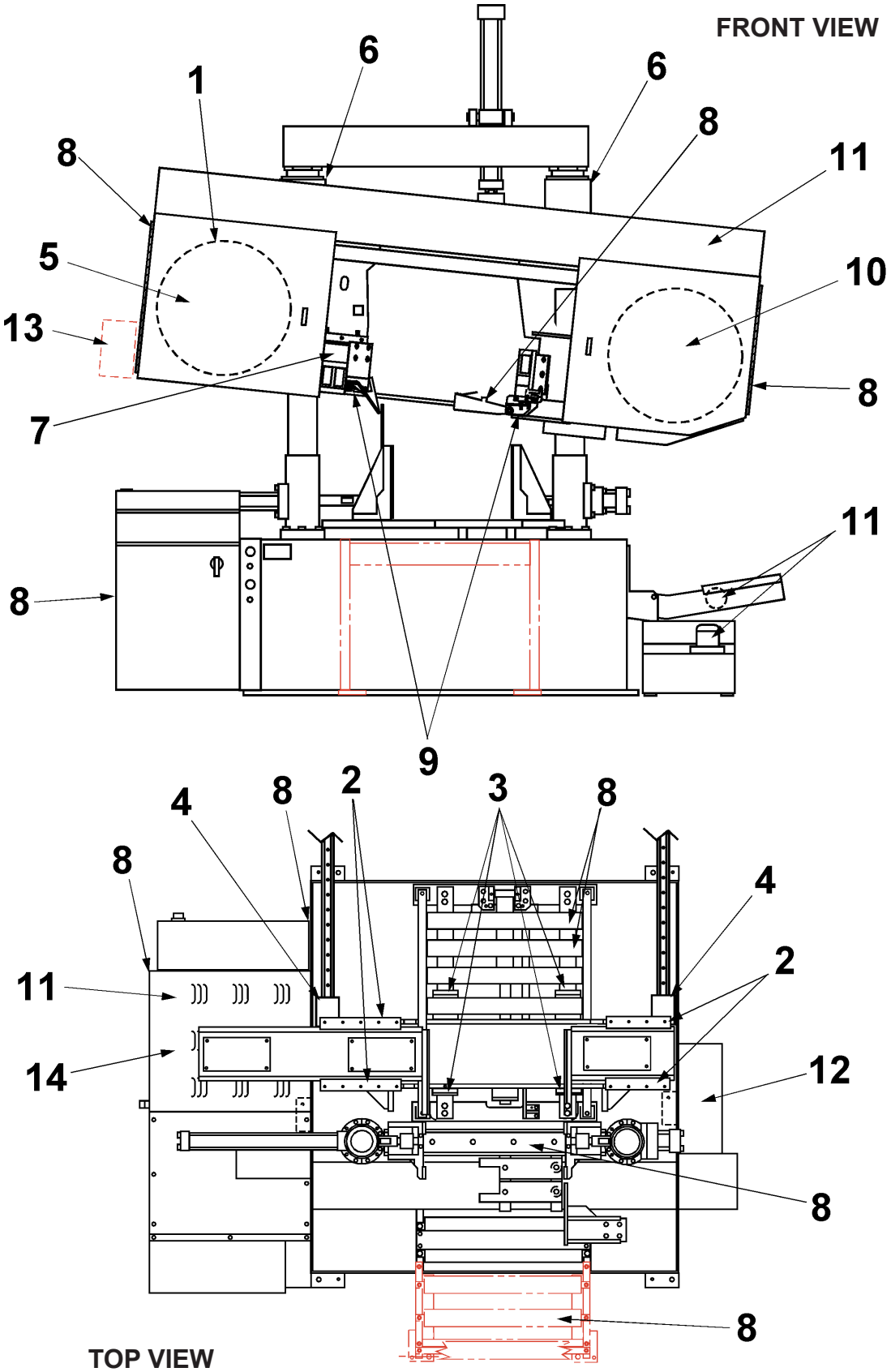
LUBRICATION

LUBRICATION CHART

LUBRICATION POINT NO.	LOCATION DESCRIPTION AND SERVICE RECOMMENDATIONS	LUBRICATION INTERVAL*	RECOMMENDED LUBRICANT
1	**Idler Bandwheel Bearings.** One (1) grease fitting.	WEEKLY	Premium quality, multi-purpose lithium-base, EP (extreme pressure) grease. NLGI No. 2. Union 76, UNOBA EP 2, or equivalent.
2	**Index Vise Jaw Gibs.** Four (4) grease fittings.	WEEKLY	
3	**Index Vise Base (for Way Bars).** Four (4) grease fittings.	WEEKLY	
4	**Index Vise Linear Bearings (74" Index Option Only).** Four (4) grease fittings.	WEEKLY	
5	**Idler Bandwheel Slide.** Two (2) grease fittings.	MONTHLY	
6	**Column Tube Bearings.** 20 ounce (.59 liter) capacity (if changed). Located above sight glass.	WEEKLY AS REQUIRED	High quality, rust and oxidation-inhibited, medium hydraulic and general purpose industrial oil. ISO-VG Grade 68 (Formerly ASTM Grade No. 315). Union 76, UNAX RX 68, or equivalent.
7	**Saw Guide Arm Slide.** Clean and apply oil.	MONTHLY	
8	**Micellaneous: Vise Slides, Hinges, Pivot Points, Component Parts, Unpainted Surfaces, etc.** to ensure function and maintain appearance while reducing wear, corrosion, rust, etc. Apply when and where needed in amounts required.	AS REQUIRED	
9	**Saw Guide Insert Screws.** Apply oil to the threads.	INSERT CHANGE	
10	**Transmission.** 9 quarts (8.5 liter) capacity. Drain and refill every six (6) months. **Do not overfill.**	6 MONTHS	High quality, 4EP (extreme pressure) multi-purpose gear oil. Mobil Gear (629-YC1F4), Union Extra-Duty NL Gear Lube. A.S.T.M. Std. No. 250.04.
11	**Electric/Hydraulic Motors.** Band Drive, Hydraulic, Coolant and Chip Conveyor.	Lubricate (if any) per manufacturer's recommendations.	
12	**Coolant Reservoir.** 29 gallons (109.7 liter) capacity. Drain, clean and refill whenever coolant becomes undesireable for further use. Clean the mesh screen at the same time.	CHECK DAILY/ AS REQUIRED	Premium quality, saw band coolant and lubricant. DoALL cutting fluids (Power-Cut).
13	**Band Mist Lubricator (Optional).** Keep reservoir filled and hoses clear.	CHECK DAILY/ AS REQUIRED	Contact your DoALL sales representative for the best oils and/or fluids for your application. DoALL cutting fluids and/or oils.
14	**Hydraulic System.** Ten (10) gallon (37.8 liter) capacity. Check fluid level daily and keep the reservoir full. Drain, change the filter element and refill after the 1st month; every six (6) months thereafter.	CHECK DAILY/ AS REQUIRED	Multi-purpose automatic transmission fluid. General Motors Dexron III, or equivalent.

*** Lubrication intervals are based on a 8-hour day, 40-hour week. Lubricate more often with heavier use.**

LUBRICATION DIAGRAMS



MAINTENANCE

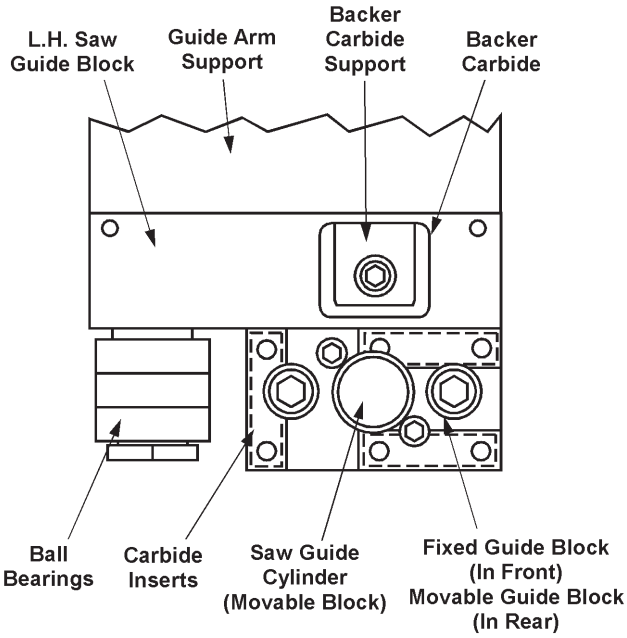
REPLACING SAW GUIDE INSERTS

To Replace Left Saw Guide Carbide Inserts

Be sure the band drive motor is not running when replacing saw guide inserts and back-ups.

1. Remove the two (2) M10 socket head screws from the front of the saw guide block. **DO NOT allow the insert block to fall when the screws are removed.** Three (3) carbide inserts are mounted to the front block. Each is held in place by flat head screws. Remove and replace the carbides if worn.

2. The rear carbide insert block may be removed ***after*** front block removal. To do so: **(a)** Remove the two (2) M6 socket head screws from the rear of the guide block. **DO NOT lose the belleville spring washers used with the M6 screws** (16 per screw); **(b)** Slide the rear carbide insert block off the two (2) guide pins; **(c)** Remove and replace the carbides if worn.



Left Saw Guide Assembly.

3. The back-up carbide insert has four (4) wear surfaces. To change the carbide from a worn to unworn surface: **(a)** Remove the pipe plug from the front of the guide block; **(b)** Loosen the slotted head shoulder screw with a large straight blade screwdriver; **(c)** Remove the shoulder screw with a split-holding screwdriver. **DO NOT allow the insert to fall when the shoulder screw is removed; (d)** Rotate the back-up insert to an unworn side; **(e)** Replace the shoulder screw; **(f)** Tighten screws in reverse order and replace the pipe plug.

4. Slide the rear carbide insert block over the guide pins. Replace the M6 screws and belleville spring washers. **DO NOT tighten fully.**

5. Replace the front carbide insert block.

6. Place the saw band or a piece of saw band between the carbides.

7. Press the "START HYDRAULICS" key and turn the **Band Tension** selector to "ON". This clamps the carbide inserts to the saw band.

8. Tighten the rear M6 socket head screws fully on the belleville spring washers. Then loosen the screws by 1 to 2 turns. The loose screws tensioned by the belleville washers allow the moving carbide insert block to open when the **Band Tension** selector is switched to "off".

To Replace Right Saw Guide Carbide Inserts

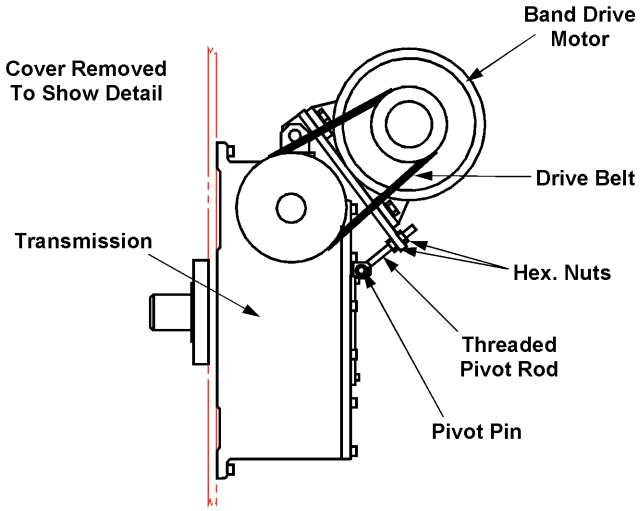
1. Remove the sensing arm and the left saw band guard.

2. Follow the same procedure described for the left saw guide.

3. Replace the sensing arm and right saw band guard.

BAND DRIVE BELT REPLACEMENT

1. Turn the machine and disconnect switch off. Then: **(a)** Remove the band drive assembly cover; **(b)** Loosen the hex. nuts on the threaded pivot rod (the drive motor will lower as you loosen the lower hex. nut); **(c)** Remove the broken drive belt.



Belt Replacement.

BAND DRIVE BELT REPLACEMENT (Continued....)

2. Position the new drive belt over the drive pulley sheaves. Then: **(a)** Using a bar, move the motor suport plate up until the correct tension is achieved (belt has very little movement at the center span; **(b)** Tighten the lower hex. nut, then the upper hex. nut.

3. Turn the disconnect switch to "ON". Then; **(a)** Turn the "START HYDRAULICS" and "BANDCYCLE START" keys; **(b)** Check the operation of the new drive belt ; **(c)** If the operation is satisfactory, press the "BANDCYCLE STOP" key; **(c)** Replace the cover assembly.

HYDRAULIC SYSTEM

1. Keep the reservoir filled at all times. Capacity is 20 gallons (75.7 liters). Check the reservoir oil level daily by referring to the sight gauge.

2. Before changing the hydraulic oil: **(a)** Lower the saw head completely; **(b)** Press the "STOP HYDRAULICS" key; **(c)** Remove the reservoir drain plug; **(d)** Allow the reservoir to drain completely.

3. Clean, refill the reservoir, and change the oil filter after the first month of operation; every six (6) months thereafter. Clean the suction strainer and filler opening screen when necessary. Automatic transmission fluid is the recommended product.

System Pressure

1. Hydraulic system pressure is correctly set at the factory and should not require adjustment for a considerable period of time. Correct system pressure is 1000 psi (69 bar or 70.3 kg/cm²).

2. Pressure is adjusted by turning the external screw extending outward from the hydraulic reservoir. Consult with a DoALL service representative if assistance is needed.

Pump Repair & Replacement

1. **DO NOT attempt to repair the hydraulic pump.** Return it to the factory for repair or replacement. Be sure to specify the correct pump model and serial numbers when returning the unit.

2. Following a new pump installation: **(a)** Jog the "START HYDRAULICS" and "STOP HYDRAULICS" keys several times; on for two (2) seconds, off for three (3) seconds until the pump is primed; **(b)** Check for proper pump rotation while jogging the buttons; **(c)** Review wiring connections if the pump rotates in the wrong direction.

After the pump has been primed, run it for several minutes while operating the machine's controls to purge entrapped air from the pump and system. Check for oil leaks while the system is being operated.

Seals & Cups

1. Seals and cups used in DoALL hydraulic systems are compatible ONLY with hydraulic oils having an aniline point between 215° and 230° F. (102° and 111° C.).

2. If hydraulic oil having an aniline point not falling within the above range is used, the seals may either swell or shrink and harden. This causes machine malfunction and leakage.

DoALL hydraulic fluid with an aniline point of approximately 221° F. (106° C.) will not cause deterioration of component seals.

COOLANT SYSTEM

1. The machine's colant reservoir has a 29 gallon (109.7 liter) capacity. A reservoir level sight gauge is located at the machine's right front side.

2. Check the coolant often for signs of contamination or breakdown. The reservoir and coolant system should be drained and cleaned thoroughly when the cutting fluid becomes undesireable for further use. If another type of coolant is to be used, the entire coolant system must be flushed (use DoALL's Kleen Flush).

3. To thoroughly clean the reservoir section below the conveyor trough, removal of the trough will be necessary.

BAND BRUSH

1. The band brush will wear and lose steel bristles over time. Check often to be sure the bristles are removing metal chips from the blade tooth gullets, but are not touching the bottom of the gullets.

2. Move the brush closer to the blade as normal wear occurs. Replace the brushes when necessary.

DO NOT adjust the band brush while the saw band is running.

MACHINE CLEANING

1. Keep the machine and its parts as clean as possible to prevent excessive wear and damage.

2. Use the **Flushing Hose** to remove metal chips and other waste materials which may collect around the saw guides, bandwheels, vises, slides, sensing arm, etc. The hose has a hand-operated valve and is attached to the coolant pump. **The DoALL Company recommends using the Flushing Hose to remove chips at least twice per each eight (8) hour shift, and more often when necessary.**

3. Use the supplied shovel-rake to remove accumulated metal chips or other waste materials from machine areas.

Combination Shovel-Rake.

Be sure the band drive motor is stopped before raking or removing chips.

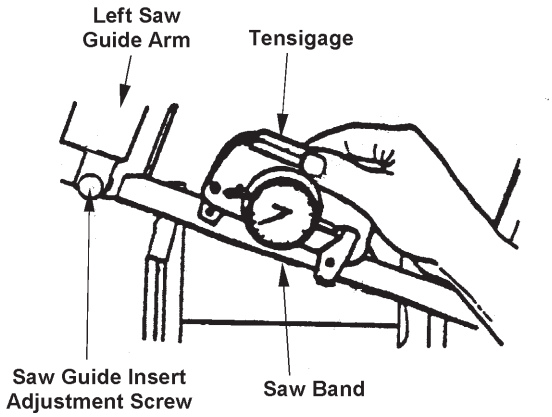
MACHINE ALIGNMENT

1. Misalignment of the machine's saw guide arms, slide bar, saw band, pivot points, transmissions, etc., will cause inaccurate sawing.

DO NOT attempt any alignment procedures not covered by this manual. Contact a DoALL service representative in such cases because special fixtures and techniques may be required.

BAND TENSION MEASUREMENT

1. Band tension measurement must be made with the machine's hydraulics running and the **Band Tension** selector at "ON".



Using a Tensigage to Measure Band Tension.

2. Tension may be checked "reading up" or "reading down". To "read up": **(a)** Fix the Tensigage to a slack saw band; **(b)** Apply tension. To "read down": **(a)** Fix the Tensigage to a tensioned saw band; **(b)** Relax tension.

3. A DoALL Tensigage reading of 3.8 to 4.0 indicates correct saw band tension.

WEAR PLATE REPLACEMENT

1. The removeable vise jaw and vise bed wear plates must be replaced before excessive wear causes the mounting screw heads to become damaged and makes removal difficult.

Vise Jaw Plates

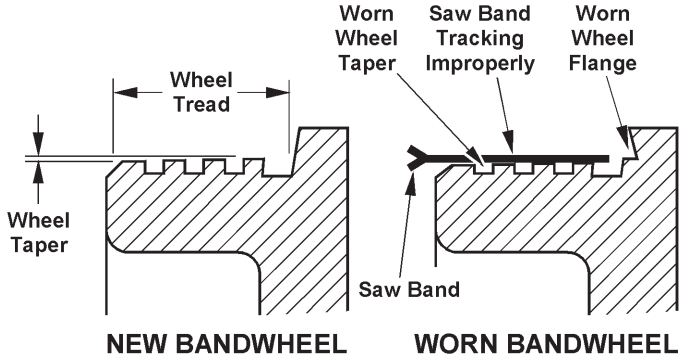
1. The machine has 10 vise jaw wear plates, four (4) on the front vise jaws and six (6) on the index vise jaws. All wear plates are mounted with low-head screws. **Be sure the vise jaws are separated and the machine turned off before trying to replace the wear plates.**

TRANSMISSION

1. Transmission replacement, repair, adjustment or alignment should be performed only by a DoALL service representative.

BANDWHEELS

1. Occasionally check each wheel's back-up flange and wheel tread for wear. Saw bands will not track properly if the taper is worn from the wheel tread.



Bandwheel Flange and Tread.

2. Replace the entire bandwheel if the rim becomes badly worn.

3. Ideally, the saw band should be tracking on both wheels so that the back edge will just lightly contact the wheel flanges, or is not more than 0.005 inch (0.127 mm) away from the flanges.

CLEANING CHIP CONVEYOR

1. Follow these steps to clean the chip conveyor: **(a)** Turn the disconnect switch to "OFF" ; **(b)** Disconnect the hydraulic hoses from the hydraulic motor; **(c)** Remove the two (2) screws holding the conveyor to the machine frame and pull the chip conveyor out from its cradled position in the base; **(d)** Clean the chip conveyor trough; **(e)** Clean the reservoir floor; **(f)** Replace the conveyor, screws and hoses.

BAND LUBRICATOR

1. See the instructions sent with the unit for information on maintenance and any adjustments.

TROUBLE SHOOTING

Repair and adjustment procedures should be made only by experienced maintenance personnel, or by a DoAll service representative. Reference to the machine's electrical and hydraulic schematics may be helpful.

MACHINE WILL NOT START

1. Check to see if both disconnect switches are “ON”.
2. The **Emergency Stop** pushbutton must be reset (turn the button head **clockwise**).
3. Check the condition of the main circuit breakers.
4. Push the motor starter overload reset buttons located in the electrical cabinet. If overload tripping re-occurs, locate and correct the problem.
5. Be sure the bandwheel doors are closed.
6. Check to be sure that the **Band Tension** selector switch is in the "ON" position.
7. The out of stock limit switch **(6 LS)** has been actuated.
8. Check the control transformer for power.
9. Check the hydraulic motor or wiring.
10. Check the starter, relay coils and contacts for faulty operation.
11. Have an electrical service person check the continuity of the starting circuit.

MACHINE STARTS, BUT WON’T CONTINUE RUNNING

1. The saw band is broken or too long and is tripping the band tension limit switch **(1 LS).**
2. Check to see if the bandwheel doors are closed (the band drive motor will not start unless both doors are closed).
3. The saw head has not cleared the head down limit switch **(2 LS)**. Press the “SAW HEAD UP” key.
4. The out of stock limit switch **(6 LS)** has been actuated.

SAW BAND STALLS DURING A CUT

1. Decrease saw head feeding pressure.
2. Check to see if drive belt tension is adequate to resist "cogging" underload.
3. Use a Tensigage to check for proper saw band tension.
4. Check for proper operation of the **Band Tension** selector.
5. Check for a worn, or improperly adjusted band brush.

BLADE TOOTH GULLETS ARE LOADING

1. Use a coarser pitch saw band.
2. Increase the band speed setting, or decrease the feed pressure setting.
3. Check for improper coolant application.
4. Check the positioning of the band brush. Adjust or replace the brush, if necessary.

SAW BAND SQUEAL

1. The lead-in/exit rollers are: **(a)** Not contacting the saw band; or **(b)** Positioned too tightly against the saw band.
2. Check for defective lead-in/exit roller bearings.

SAW BAND VIBRATION

1. Check for a dull or damaged saw band.
2. Incorrect band speed or feed pressure setting is being used.
3. Check for incorrect saw band pitch.
4. Coolant mixture is weak, or incorrect coolant is being used.
5. Stockpiece is not being firmly clamped by the vise jaws.
6. Check for worn or improperly-adjusted saw guide inserts.

7. Check for a worn saw guide back-up carbide or lead in/exit rollers.

8. Check for incorrect saw band tension.

PREMATURE BLADE TEETH DULLING

1. Band speed and/or cutting rate is too high.

2. Check for faulty stock: Heavy scale, inclusions, hard spots, etc.

3. Stock analysis is incorrect. This can result in an incorrect cutting recommendation.

4. Coolant is not covering the saw band properly.

5. Check for saw band vibration.

6. Check for chip welding, or a chipped blade tooth lodged in the cut.

7. Saw band being used is incorrect.

8. Coolant mixture is too weak, or incorrect coolant is being used.

9. The saw band is not properly tensioned.

10. Decrease feed pressure to "break in" a new saw band on its first few cuts.

BLADE TEETH STRIPPING

1. Increase band speed or decrease feed pressure.

2. Check for chip welding, or for a chipped blade tooth lodged in the cut.

3. Faulty stock is being used: Check for heavy scale, inclusions, hard spots, etc.

4. Check for a worn, or improperly adjusted band brush.

5. Check for vibration caused by loose vise jaw clamping against the stockpiece.

6. Check for worn saw guide inserts and/or carbide back-up bearing.

7. Coolant is not being applied correctly.

8. Check for incorrect saw band tension being used.

9. Saw band pitch may be too coarse for thickness of the stock section.

SAW BAND BREAKAGE

1. The saw band is being dropped into the stockpiece due to incorrect saw head feeding rate.

2. Increase band speed being used and/or decrease feed force.

3. Check for stock not being held firmly by the vise jaws.

4. Check for incorrect adjustment of the saw guide inserts and carbide back-up guides.

5. Check for insufficient coolant flow.

6. Use a finer pitch saw band.

7. Check for incorrect saw band tension.

SAW BAND IS NOT RUNNING TRUE AGAINST THE SAW GUIDE BACK-UP BEARINGS (May Cause Vibration)

1. Examine the carbide back-up bearings. Replace them if they are chipped or worn more than 0.020-inch (0.5 mm).

2. Check machine alignment (by a DoALL service representative).

3. Check for a worn lead in/exit roller.

4. Saw guides are loose.

INACCURATE CUT-OFF

1. Check for worn or dull blade teeth.

2. Check for a hard spot in stock being cut.

3. Band brush is not properly cleaning the blade teeth.

4. Increase band speed being used and/or decrease feed force.

5. Check for dirty coolant. Replace if necessary.

6. Check for crooked stock (this can result in straight, but not square cuts).

7. Check for loose saw guides.

8. Saw band pitch choice is incorrect.

9. Check for incorrect saw band tension.

10. Check for incorrect adjustment of inserts or back-up bearing.

11. Check for coolant not being supplied evenly to both sides of the saw band.

12. Check machine alignment. Have a DoALL service representative check and/or adjust machine alignment.

SURFACE FINISH OF CUT-OFF PIECE IS TOO ROUGH

1. Check for vibration while sawing.

2. Check for a damaged saw band.

3. Use a finer pitch saw band.

4. Increase band speed being used and/or decrease the feed rate.

5. Check the saw band back-up carbides for wear. Replace them if necessary.

6. Check for incorrect saw band tension.

CUTTING RATE IS TOO SLOW.

1. Use a coarser pitch saw band.

2. Increase band speed and/or feed force.

NO COOLANT FLOW

1. Check for low coolant level in the reservoir.

2. Remove the coolant valves and hoses. Then use an air hose to clean out both units.

3. Clean the coolant pump intake screen.

4. Check for coolant pump failure.

5. Check for a faulty coolant pump fuse.

STOCK FEEDS ERRATICALLY

1. Check for low hydraulic system oil level.

SAW HEAD WON'T LOWER

1. The feed rate setting is too low.

2. Check the head clear limit switch **(3 LS)** for faulty operation.

3. Check **Solenoids 1 & 2** for incorrect operation.

4. Check for saw head obstruction.

SAW HEAD WILL NOT RAISE, OR RAISES SLOWLY

1. Check for faulty **Solenoid 2** operation.

2. Check for low hydraulic system pressure caused by blockage, clogged oil filter cartridge, or pinched hose.

SAW HEAD LOWERS ERRATICALLY

1. Bleed air from the head lift cylinder. It may be necessary to raise and lower the saw head several times to thoroughly bleed the head lift cylinder.

SAW HEAD WON'T STOP AT THE CORRECT STOCK HEIGHT

1. Check the sensing arm. Is it positioned correctly relative to the saw band?

2. Check to see if the sensing arm is properly actuating the head clear limit switch **(3 LS)**

3. Check for faulty **Solenoid 2** operation.

SAW HEAD DOESN'T LOWER FOR REPEAT CUTS

1. Check for faulty operation of **Solenoids 1 and 2**.

2. Check adjustment of the head clear limit switch **(3 LS)**.

3. Check adjustment of the index forward limit switch **(4 LS)**.

VISES WON'T TRANSFER AND SAW HEAD STAYS DOWN

1. Check for faulty operation of the head down limit switch **(2 LS)**.

2. Check to see if **Solenoid 3** is operating.

INDEX VISE WON'T MOVE FORWARD

1. Check to see if **Solenoid 15** are operating.

VISES WON'T TRANSFER AFTER AN INDEX

1. Check for faulty operation of the index forward limit switch **(4 LS)** on the index vise base.

2. Check for faulty operation of **Solenoids 4 and 12.**

INDEXER WON'T RETURN

1. Check fo see if **Solenoids 15 and 16** are operating.

2. Check for incorrect adjustment of the index forward limit switch **(4 LS).**

SLUGGISH HYDRAULIC COMPONENTS OPERATION

1. Check for low hydraulic system pressure or low reservoir level.

2. Check for air in the hydraulic system.

3. Check for a blocked or clogged hydraulic filter.

4. Check for faulty hydraulic pump operation.

BAND DRIVE TRANSMISSION GETS HOT

1. Check for low transmission fluid level.

2. Check for lubricant leakage.

NUISANCE OVERLOAD TRIPPING

1. Check to see if the overload relays are set too low. Increase the setting if necessary.

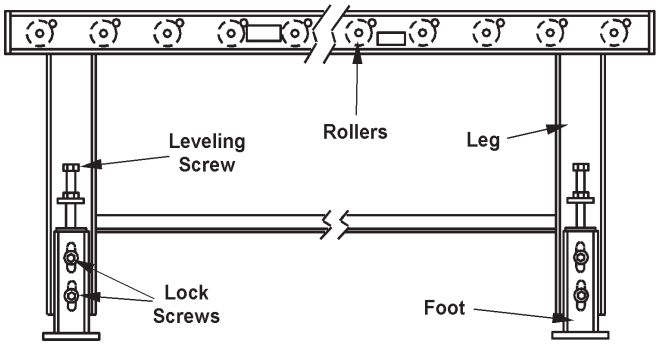
ACCESSORIES

ROLLER STOCK CONVEYORS

1. Your machine may be equipped with one of the following roller stock conveyors for moving long stock into cutting position (or as an unloading adjunct). The following conveyors are available:

- Stock conveyor five (5) feet (1524.0 mm) long by 30 inches (762.0 mm) wide with a weight capacity of 2250 pounds (1020.6 kg) per roller.

- Stock conveyor ten (10) feet (3048.0 mm) long by 30 inches (762.0 mm) wide with a weight capacity of 2250 pounds (1020.6 kg) per roller.



Roller Stock Conveyor.

2. To install a roller stock conveyor: **(a)** Position the assembled conveyor(s) behind or in front of the machine base; (b) Adjust the conveyor to the machine with the leveling screws on the conveyor legs. The top of the front conveyor roller should be inline to 0.010-inch (0.25 mm) above the vise bed wear plate.

3. The remaining rollers must be parallel to, and in the same plane with the vise beds to within 0.010-inch (0.25 mm) per 24 inches (609.6 mm) of travel.

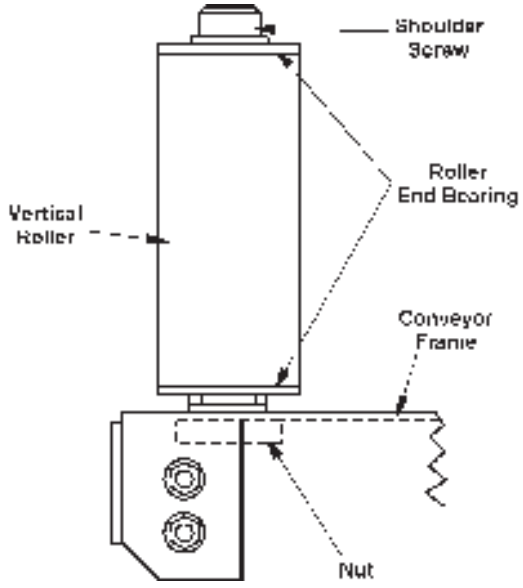
4. Depress the roller shafts for ease of installation or removal of rollers.

The conveyor DOES NOT attach to the machine base. Anchor the conveyor to the floor after all leveling and adjustments are made.

VERTICAL GUIDE ROLLERS

1. Vertical guide rollers are effectively used to help maintain correct positioning of long stock on the conveyor.

2. These can be installed between the interface plate and conveyor or between conveyors (if more than one is supplied).



Vertical Guide Roller.

VERTICAL HOLD DOWN FIXTURE (NESTING)

1. This feature is designed for high-production, multiple sawing of stacked bars, rounds and tubing. Its jaws have the capacity to hold stock from 10.25 to 25.5 inches (260 to 650 mm) wide, and from 6.3 to 25.5 inches (160 to 650 mm) high.

2. Vertical nesting clamp cylinders are mounted to the machine's front and index vises. The cylinders operate simultaneously with the regular vise clamping cylinders.

The hydraulically operated Vertical Hold Down Fixture can also be used with the Variable Vise Pressure control.

<u>Prepare Machine and Vises</u>

1. Go to the **Setup Screen**.

2. Make sure the the key says "NEST ON". If not press the key again.

3. Be sure to enter all other necessary sawing parameters before starting the sawing process.

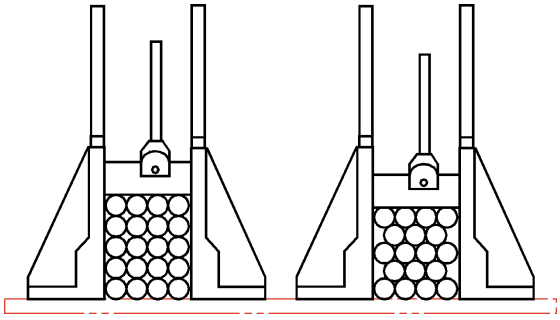
VISE OVERLAP cannot be changed in Nesting mode.

VERTICAL HOLD DOWN FIXTURE (Continued....)

Stacking Stock

1. Correct stock nesting is essential for proper clamping of the vises and nesting fixture. It is important that nesting vise clamping pressure be transmitted to every stacked piece. Sometimes this can be more easily accomplished by manually jogging the stack.

2. Proper stacking of round stock is important because saw band breakage may occur if round nested pieces slip or spin during sawing.



Round Stock Stacking Methods.

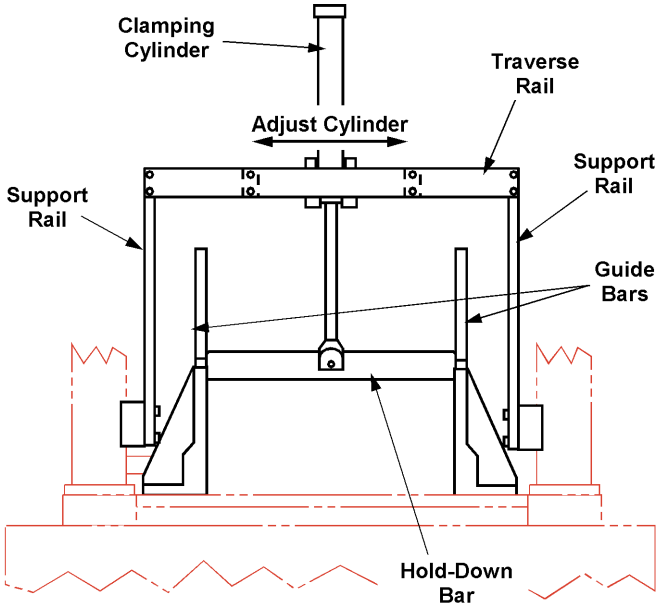
3. Two (2) workable round stock stacking methods are shown in the next illustration (using the same number of rounds in each row usually provides the best sawing results, although the alternate method can be used if the material is not stacked too high).

4. Pieces should be stacked as closely together as possible. Metal chips lodged in open spaces between individual pieces will affect cutting accuracy.

Vise Adjustment

1. Stack stock to be cut between the machine's vise jaws. Then: **(a)** Center the nesting fixture's vertical clamping cylinder; **(b)** Press the "FIXED CLAMP" and "INDEX CLAMP" keys; **(c)** Bolt the supporting bar tightly to the fixed vise jaws, but not to the moveable vise jaws.

2. Adjust the horizontal clamp bars commensurate with the size of the nested stock. Then adjust the feed table's vertical guide rollers (if supplied) so the stock will be guided correctly toward the saw band.



Nesting Fixture Vise Adjustments.

3. If the horizontal clamping vises and the vertical nesting clamp **do not** release at approximately the same time: **(a)** Adjust the hydraulic restrictor valve at the rod end of the front and/or index vise cylinders to achieve relatively equal release.

For Best Nesting Cutting Results

1. Stack the same number of stockpieces in each row.

2. The stack should always be higher than it is wide.

3. Increasing the hold-down vise clamping pressure will increase the holding load per piece (the **Variable Vise Pressure** valve controls the clamping cylinders).

4. Apply as much coolant as possible while cutting.

5. Replace wear plates on the moveable vise jaw and nesting fixture's vertical clamping jaw when they become worn.

6. Adjust the feed table's vertical guide rollers (if supplied) to keep the stack from collapsing when the vises are unclamped.

7. Generally, reduced band speed and feed force are necessary when sawing stacked materials. This results in a lower cutting rate than possible when sawing solid stock.

8. In some instances, increased production and blade life may be obtained by nesting **fewer** pieces than maximum vise capacity permits.

BAND LUBRICATOR

1. See the instructions sent with the unit for information on operation and adjustments.

DISCHARGE TABLE

1. Some operations having a long length of stock to be cut will benefit with the discharge table to support the longer cut-off pieces.

LASER LINE OPTION

To avoid eye damage, DO NOT stare into the laser beam.

1. A laser devise is used to emit a line on the material to be cut. This line shows the approximate spot where the cut will take place.

2. The devise is controlled by a selector switch with "ON" and "OFF" settings and is located below the control panel. Turn the laser "OFF" when not in use.

3. The laser is adjustable to position the laser beam where desirable.

4. When the laser is turned on, a warm-up period of 3 to 5 seconds take place before a line appears. If the line is difficult to see, darken the work area to enhance the line.

5. Remove the protective shipping cap from the laser devise before operation.

74" (1880 mm) INDEX OPTION

1. This factory installed option allows single indexes of up to 74 inches (1880 mm) in length instead of the standard 20 inches (508.0 mm). All other operations and data remain the same.

MATERIAL HANDLING EQUIPMENT

1. Special material handling equipment can enhanced the performance of your machine. Contact your DoALL sales representative for information on any material handling needs that could increase your productivity.