

IT80JR/ITC80J-120 *User Manual*



Original Instructions
(Not a translation)

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SAFETY GUIDELINES AND WARRANTY

SAFETY INSTRUCTIONS

Read this manual to help you understand the intent and operation of this tool prior to installing BAND-IT JR Clamps

- This product manual contains detailed instructions for setting up the tool and safely installing ties.
- Always wear safety glasses, appropriate gloves and safety shoes when operating this tool.
- Keep hands away from tool head and clamp while operating.
- Care should be taken to ensure fingers are not in the way of the clamp being applied.
- Maintain the tool by following the scheduled preventative maintenance interval provided in this document.
- Never use this product for anything other than its original intended purpose.

IMPORTANT:

- The object clamped and the 3/8" JR Clamps must be compatible with each other and the environment in which the final product will be used.
- Always disconnect from air and electrical power sources before performing maintenance.

The IT80JR tool is designed for use with BAND-IT 3/8" JR Clamps only. Accordingly, BAND-IT- IDEX, Inc. makes no representations with respect to the compatibility of these tools when used with non-BAND-IT or any other incompatible clamps.

WARRANTY

For warranty information go online at:

<https://www.band-it-idex.com/en/terms-conditions>



Save these instructions for future use.

This equipment has been tested by BAND-IT-IDEX and meets the requirement of stability during use, storage conditions, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns providing that the proper safety precautions are observed.

DANGER—Misuse of this equipment may result in serious injury to personnel.

- Only use the equipment for its intended purpose, as described in this manual
- Do not attempt to operate the equipment with covers removed
- Refer to the installation section before installing machine
- Do not operate machine with wet hands

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or other personnel, or damage to the equipment.

SAFETY SIGNS

High Voltage – Risk of electric shock



Compressed Air – Risk of release of pressurized air



Pinch Point – Refer to accompanying documentation



Caution – Refer to accompanying documentation



It is the task of the employer to warn his or her staff of risks, to train them on prevention of accidents, and to provide necessary safety equipment and devices for the operator's safety.

Before starting to work with the machine, the operator should check the features of the machine and learn all details of the machine's operation. The machine should only be operated by staff members who have read and understand the contents of this manual.

The machine is only intended to be operated under conditions as outlined in this document.

GUARDING AND INTERLOCKS

Safeguards:

- Main Tool Housing: Covers primary mechanical body and actuators to prevent pinching during operation. Do not attempt to access an open gaps during tool operation.
- Head cover: Covers the mechanical head piece of the tool to prevent pinching during cutoff process. Do not place fingers in head area or under band during operation.
- Circuit breaker: Housed inside main enclosure.
- Power cord: Main method of removing power to unit. Unplug from wall or main enclosure.



Interlocking functions and features:

- The tool is not intended to operate without guards in place. The tool does not have any interlock functions or features that prevent operation if the guards are missing or enclosures are open. It is the responsibility of the user to provide safety interlocks if required.



Securing machine for safe maintenance:

- The tool must have all power and compressed air sources removed before service.
- All guards must be replaced, and enclosures closed before power and air sources are reconnected to the unit.
- Before preventive maintenance, disconnect device from wall. The appliance plug is the disconnect device.
- The Device comes with an emergency stop (E-Stop button) that cuts power to the motor and air to the pneumatics bank when depressed (activated).



Figure 1. E-Stop

PRODUCT SAFETY LOCATIONS

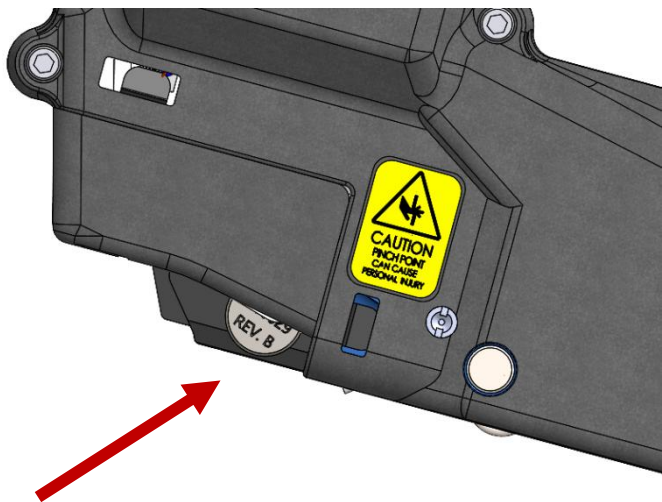


Figure 2



Warning:

Do not place fingers, hands, or any body parts under the **cutting head** while tool is running

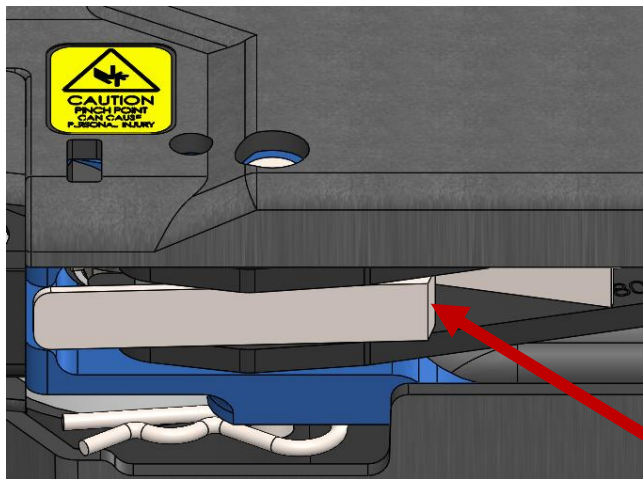


Figure 3



Warning:

Do not place fingers, hands, or any body parts near the **outlet of the tail eject** while tool is running

OVERVIEW

- The IT80JR is designed to install 3/8" JR Clamps with repeatability and control. The machine is adjustable for individual applications and provides data to ensure the quality of the finished assembly
- The IT80JR is powered by pneumatic cylinders and an electric motor powered with an AC connection. Data is transferred from tool to controller (Siemens PLC) and can be extracted utilizing USB or ethernet
- The mechanical drive portion of the tool tensions, and cuts a clamp to form a durable and strong fastened joint between two objects
- The electronic control of the tool uses feedback from the mechanical portion to accurately control the tension process of the tool and activate the cut
- The tool can be programmed by the user to accommodate specific applications utilizing the HMI (Human-Machine Interface)
- The tool can provide a data output to allow for verification of the integrity of the finished assembly

QUICK START OVERVIEW

Use the following procedure to set up a new IT-Tool system:

1. Connect the tool to the controller. Follow steps in [CONNECTING THE TOOL HARNESS](#) (pg. 22)
[CONNECTING THE TOOL TO THE CONTROLLER](#) (pg. 23).
2. Connect HMI (touchscreen) to controller. Follow steps in
- 3.
4. [CONNECTING THE HMI TO CONTROLLER](#) (pg. 21).
5. Connect external regulator to controller. Connect air hose to external controller regulator. Follow steps in [CONNECTING THE REGULATOR TO THE CONTROLLER](#) (pg. 20)
Customer supplied: connect with either 3/8" OD push-to-connect tubing or 1/4" NPT thread
6. Plug in controller (120V, 1 ϕ , 50-60Hz)
7. Power on tool, ensure door latch is set to "On" and flip power switch on outlet module.
Note: If the controller is not getting power, ensure the internal circuit breaker is flipped on.
8. HMI will boot up main program screen. Enter tool serial number, located by the three mounting holes (See [PART DESCRIPTIONS AND LOCATIONS](#), pg. 13).
9. Tool is factory set to recommended settings for the IT80JR.
Ensure all settings are correct for application (See [FACTORY PROGRAM SETTINGS](#), pg. 40) and input settings as necessary.
 1. Set target torque (pg. 40, 46)
 2. Set error passcode preference (pg. 49)
10. Message banner at top of screen should read "Tool Ready" and the tool is ready to use (if trigger is unresponsive press the "Reset Error" button on the HMI).
Note: The controller needs approximately 30 seconds to boot up before the trigger is responsive

ENVIRONMENT

TRANSPORTATION, STORAGE, HANDLING

Table 1

Transportation	Avoid shocks and vibration Immediately check units for transport damage and inform your transport company, if necessary If possible, ship in original packaging
Storage	Store unit in a clean, dry place with air temperature between -25°C and +55°C (-13°F to 131°F)
Handling	Use techniques appropriate for lifting and moving heavy objects.

Normal operating conditions are defined as:

- Intended for Indoor Use ONLY at an automotive assembly plant or similar facility.
- Temperature range from 5°C to 40°C (41°F to 95°F).
- Max relative humidity 80% for temperatures up to 31°C (88°F), decreasing linearly to 50% at 40°C (104°F).
- Conforms to Applicable RATED POLLUTION DEGREE 1.
- Correct illumination for safety of operator (ISO 8995-89).
- Avoid using the tool near equipment with strong EMI / RFI emission.
- Avoid using the tool near equipment susceptible to EMI / RFI interference.
- This tool has been tested for:
 - Altitude: Sea level to 5690 ft (1730 m)
 - Atmospheric pressure: 14.7 lbs/in² (1 Kg/cm²) to 12 lbs/in² (0.85 Kg/cm²)
- Return tool to Band-It at end of life for proper recycling/disposal.

- Tool size:
- Tool only: 12" L x 6.5" W x 8" H (305 x 165 x 203 mm)
 - Controller box: 20" x 20" x 10" (508 x 508 x 254 mm)
 - Tool weight: 10 lbs (4.5 kg)
 - Tool Clearance: Recommended 3ft (1m) for operator maneuverability during use.
 - Controller weight: 63 lbs (28.6 kg)
 - Controller Clearance: Recommended 3ft (1m) to allow access for maintenance

TOOL SETUP

OPERATING REQUIREMENTS

Table 2

Clamp Type	BAND-IT 3/8" JR Clamps
Operation Air Requirements	80 PSI (552 kPa) Clean dry compressed air Air Flow Rate: 0.25 CFM (7.1 L/min.) Do not exceed 100psi (690kPa) into panel. Input supply not to exceed max listed on regulator assembly.
Power requirements	110Volts/60Hz 8 A Max 5kA SCCR
Power Cord	North America: 120V, 15A, 14AWG Cord Receptacle: IEC 60320 C13
Human-Machine Interface (HMI)	Programmable Color Touchscreen
Emergency Stop	Application of emergency stop button will stop electric motor and open all valves, removing air pressure from pneumatic cylinders.
Power Output	Motor: 24V, 3.1A MAX, 8kHz HMI: 24V, 350mA Data Cable: 24V, 2A
Airborne Noise Emissions	A-Weighted Pressure level: 70 dBA Peak C-Weighted Pressure Level: 71 dBA
Vibration Data – Handheld Unit	Continuous: 3.2 m/s ² Peak: 30.2 m/s ² @ cutoff

PART DESCRIPTIONS AND LOCATIONS

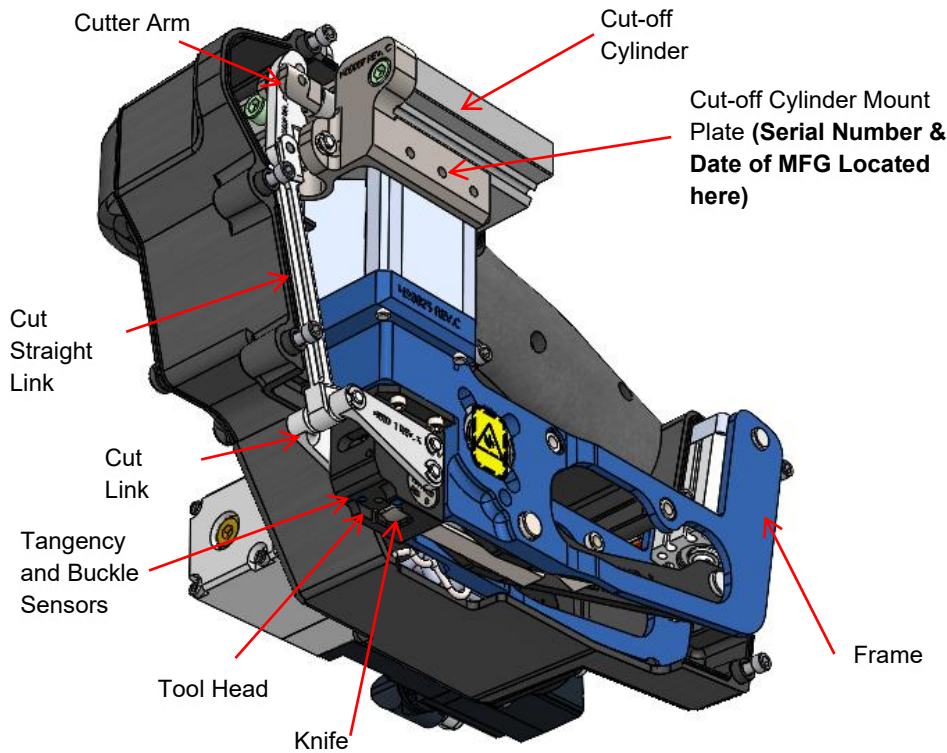


Figure 4

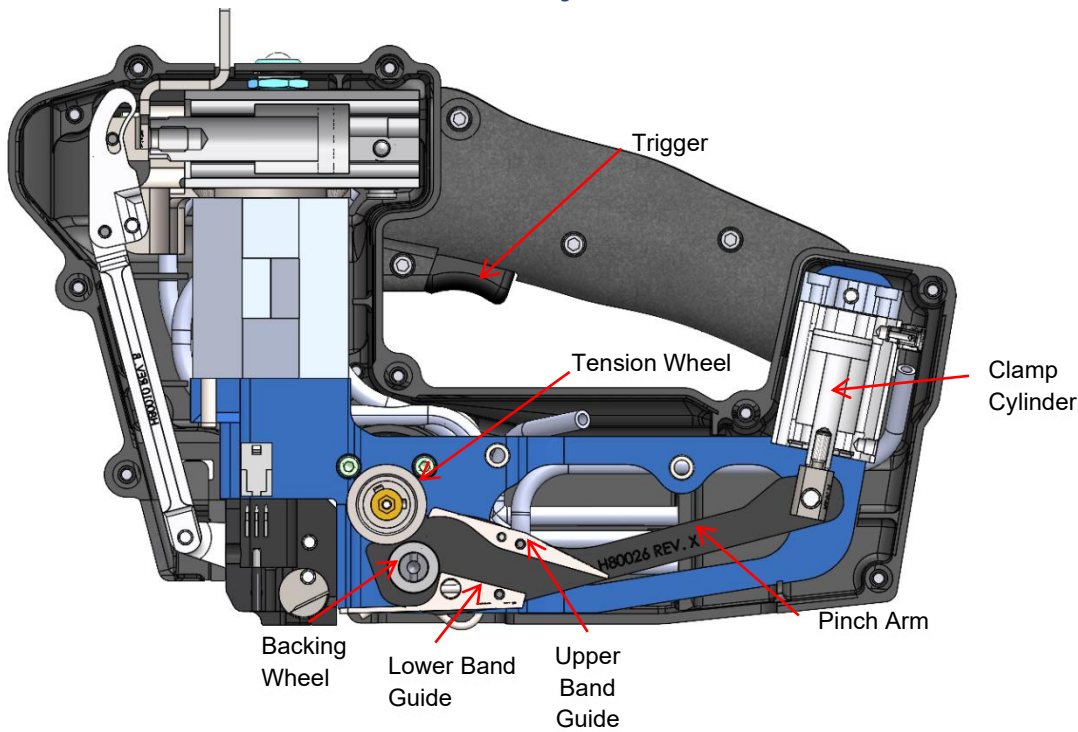


Figure 5

PART DESCRIPTIONS CONT.

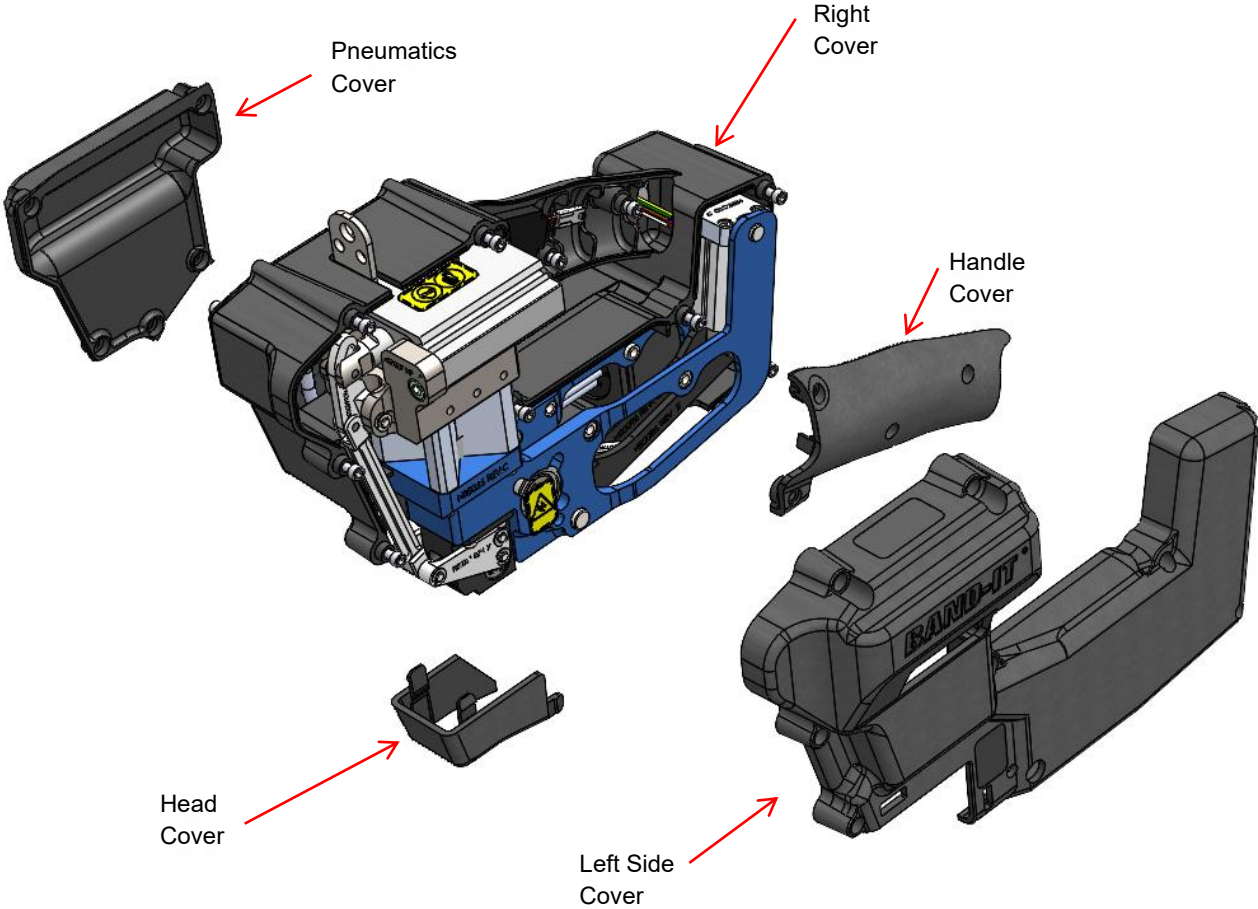


Figure 6

INSTALLATION TOOL DIMENSIONS IT80JR

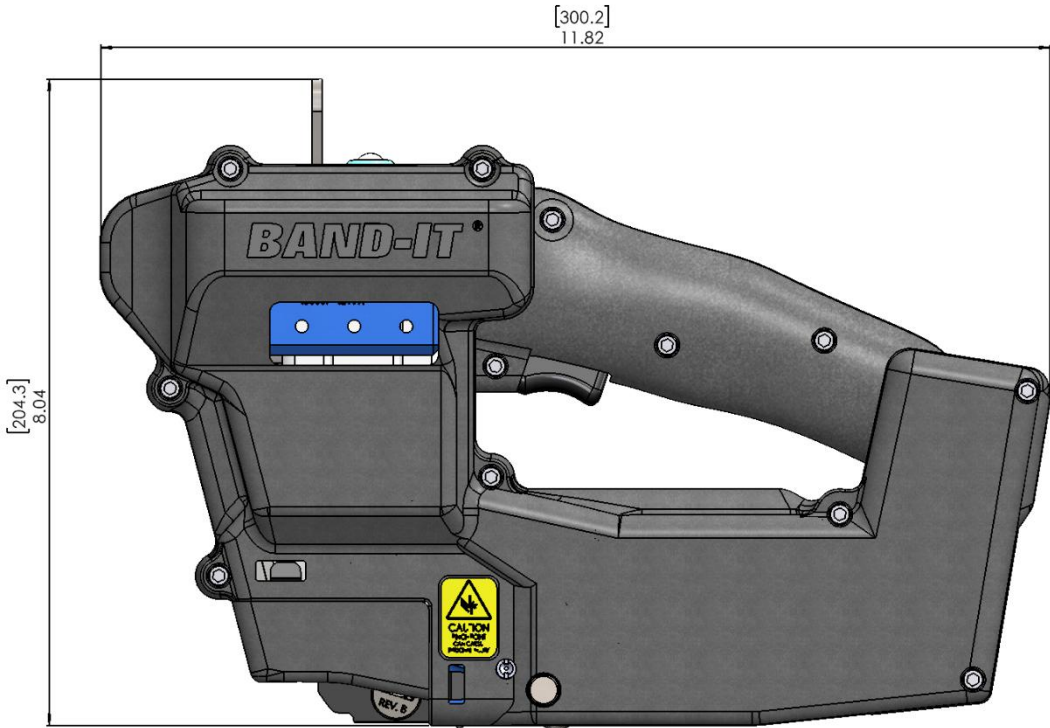


Figure 7

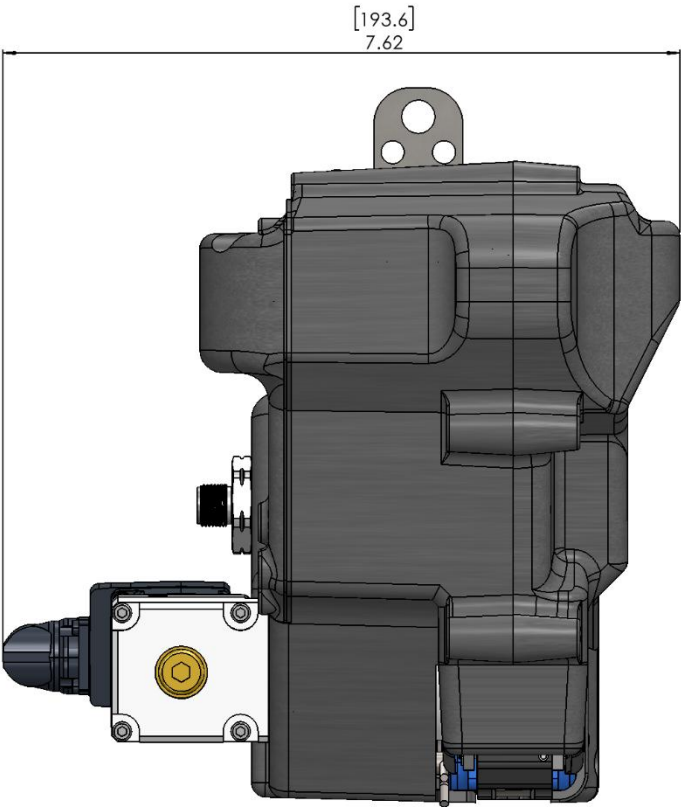
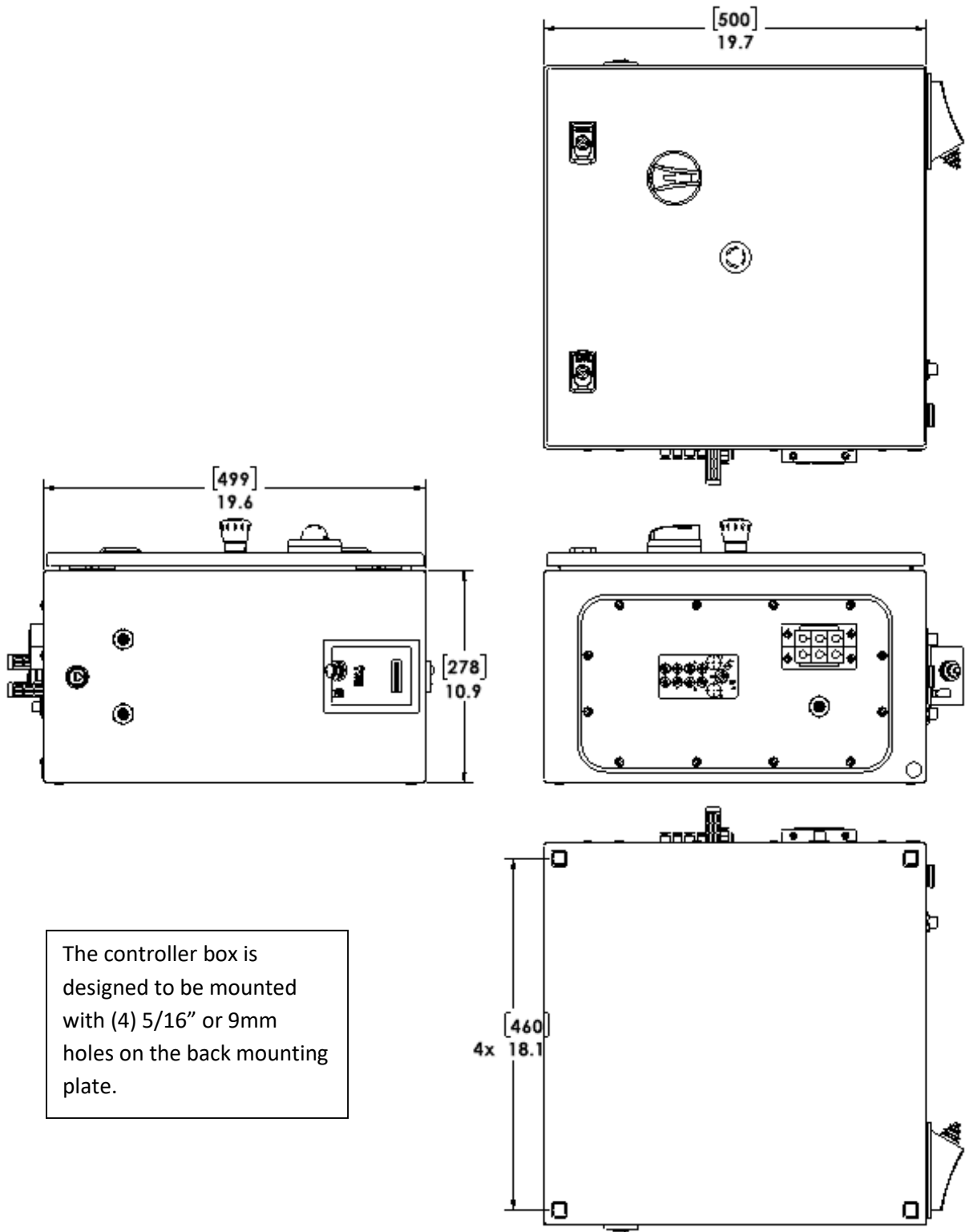


Figure 8

CONTROLLER ENCLOSURE DIMENSIONS



The controller box is designed to be mounted with (4) 5/16" or 9mm holes on the back mounting plate.

Figure 9

CONTROLLER TOOL CONNECTIONS OVERVIEW

Tool connection points are located on the bottom side of the control cabinet, per Figure 10.



Figure 10. Controller Tool Connections

On controller models, the following interfaces are exposed:

- Pneumatic Valve Bank
- Servo Cable (Connector)
- Tool Communication Connector
- Ethernet (for programming/data)

CONTROLLER PERIPHERAL CONNECTIONS OVERVIEW

Peripheral connection points are located on the right side of the controller cabinet Figure 11.

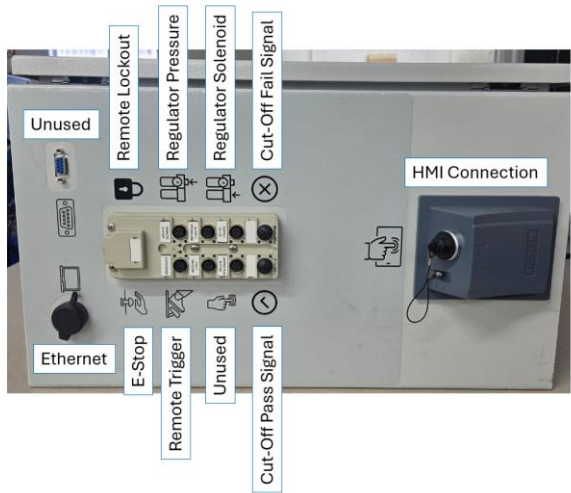


Figure 11. Panel Peripheral Connections.

On the controller the M12 electrical connections are made through the beige 2x4 M-12 block, herein described as the “M12 distribution block”. On each of these M12 ports on the distribution block, standard 24VDC/0VDC power reference pinout is used, whereas pin 1 on each port is connected to an internal 24VDC reference, and pin 3 on each port is connected to an internal 0VDC reference.

CONTROLLER AND TOOL SETUP

Read and understand the entirety of the following "CONNECTING THE ..." sections before proceeding.

This tool requires both electricity and compressed air to operate. Provisions must be made to deliver both to the tool in a safe manner.

Only plug in the power cable to the controller after all the other connections have been completed. The power entry module includes the ON/OFF switch. The power cable provided with the tool is standard grounded plug compatible with North America outlets.

CONNECTING THE REGULATOR TO THE CONTROLLER

The system pressure regulator consists of a solenoid valve and a pressure regulator (Figure 12). It has two connections that must be connected (Figure 13). Each electrical connector has a unique interface, do not attempt to force a plug into a connector if the receptable does not match or the key is misaligned.



Figure 12. Pressure Regulator Assembly.

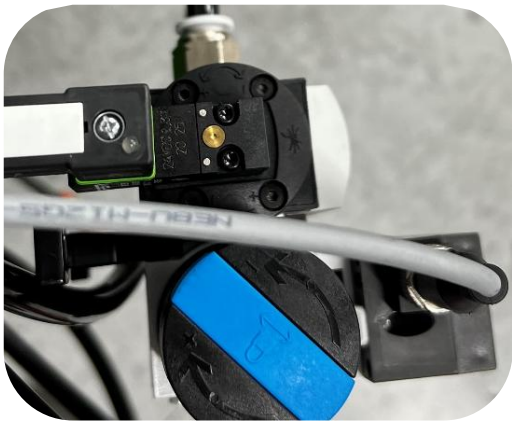


Figure 13. Pressure Regulator Connections.

On the controller the cables that connect to the pressure regulator are external, and may be replaced by the end-user if different lengths are desired. Connect the round M12 ends of the solenoid valve and pressure regulator connections to the Regulator Pressure (labeled “Supply Pressure”) and Regulator Solenoid (labeled “Supply Valve”) connections on the M12 distribution block (Figure 11).

Connect 3/8" PUR pneumatic tubing between the pressure regulator assembly and controller as shown in Figure 14. The controller-side of the tubing connects to the 3/8" PTC fitting on the valve bank. After completing the remaining controller setup, you must connect factory air supply to the remaining open pneumatic fitting on this assembly.



Figure 14. Air Connection to Pressure Regulator Assembly.

CONNECTING THE HMI TO CONTROLLER

The touch screen to interface the controller is an industrial-grade Human-Machine Interface, herein referred to as “HMI” (Figure 15).



Figure 15. HMI.

The HMI is connected to the controller with the green cable. To connect the HMI cable to the controller, align the red dots and press the connector in (Figure 16).



Figure 16. HMI Connection.

On the side of the HMI is a USB port that can be used to transfer tool data. See Figure 17.



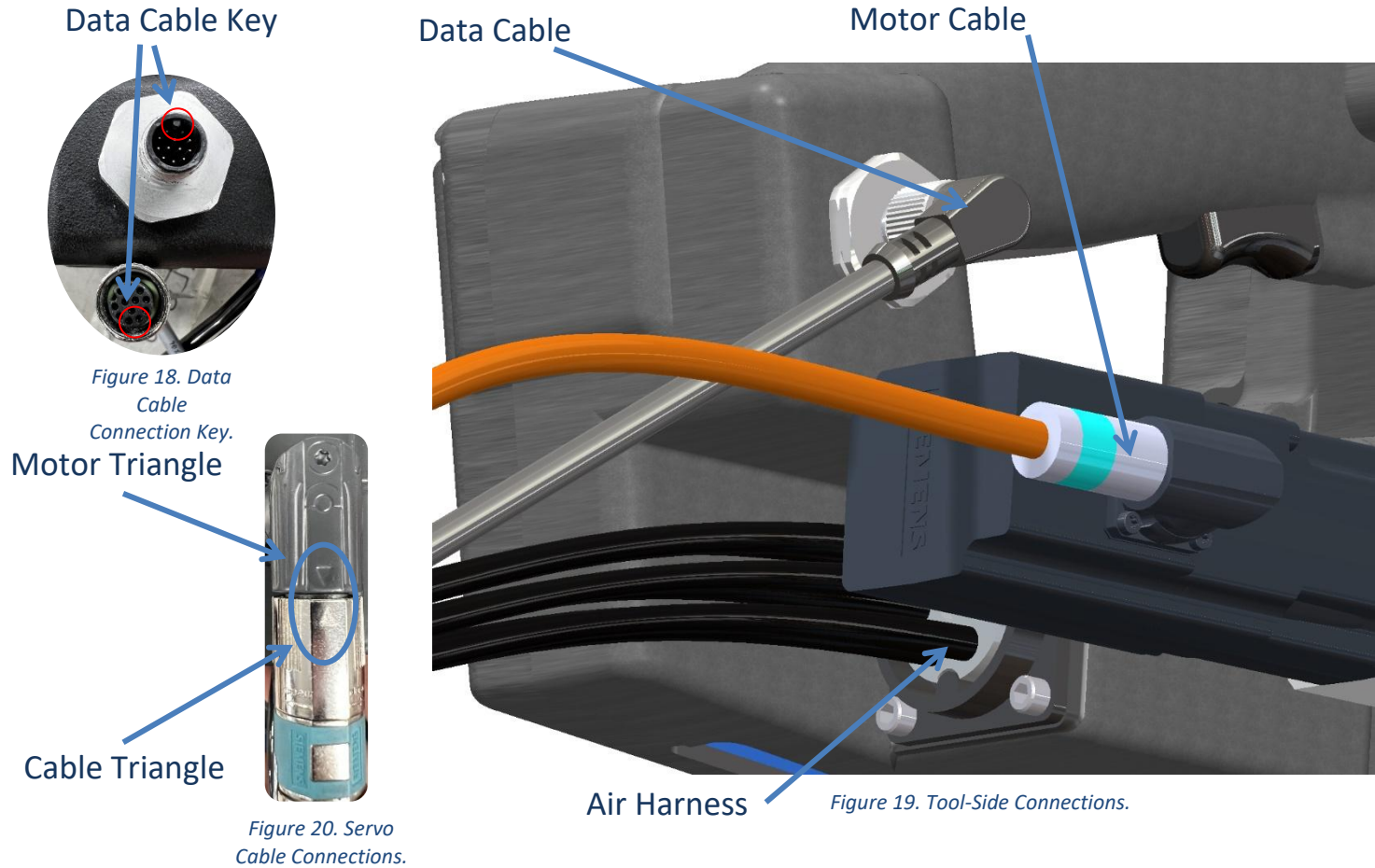
Figure 17. USB Connection on HMI.

CONNECTING THE TOOL HARNESS

Connect the data cable to the main tool housing. **To reduce risk of a bent connection pin ensure that the key is aligned before attempting to screw down the connection (Figure 20).** Each electrical connector has a unique interface, do not attempt to force a plug into a connector if the receptable does not match or the key is misaligned.

Connect the motor cable to the motor. **Ensure the connector is fully rotated in the direction of the “open” arrow, align the two triangles on the cable and motor, push cable onto motor then rotate connector by hand in the direction of the “close” arrow a minimum of 45° or until the end stop (Figure 22).** Failure to follow the order outlined above may result in bent or broken pins on the motor connector.

The tool includes an air harness with six ¼" (6.35mm) outside diameter tubes pre-assembled to quick-connect ends. Attach one end to the controller and the other end to the tool connection point, taking care to align keys before insertion. Once inserted, twist coupling until it is tight on the connector.



CONNECTING THE TOOL TO THE CONTROLLER

On the controller-side of the tool harness, connect the motor cable and data cable to the controller bottom side of the panel. See CONTROLLER TOOL CONNECTIONS OVERVIEW. Follow the instructions from the previous section, CONNECTING THE TOOL HARNESS, for instructions on aligning the connector keys properly.

Connect the pneumatic tubes from the tool harness to the controller's valve bank. Match the colors indicated on the controller to the colors indicated on each pneumatic tube.

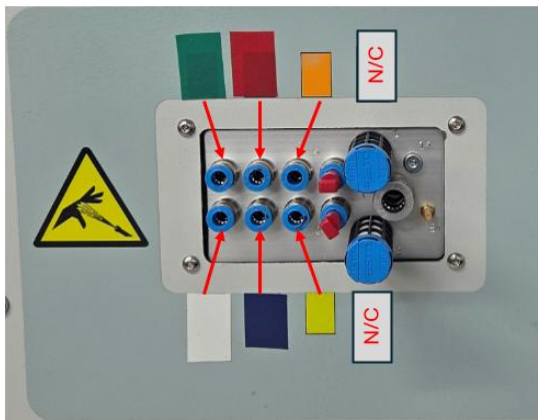


Figure 21. Unified Controller Pneumatic Tubing Connections.

CONNECTING PERIPHERAL DEVICES TO THE CONTROLLER

CUTOFF SIGNALS

The controller has inputs for a Pass/Fail “cutoff signal” and remote actuation to operate the tool hands free (Figure 11). These do not need to be connected to run the tool in normal operation.

On the controller there are two M-12 connectors that are interfaced through the M12 distribution block. Upon a tool's cycle pass, a 24VDC signal (referenced to GND, pin 3 on any M12 distribution block port) is transmitted on pin 2 of the “Cut-Off Pass” port. Upon a tool's cycle fail, a 24VDC signal is transmitted on pin 2 of the “Cut-Off Fail” port.

Additional information about Cutoff signal in [CUT-OFF SIGNAL](#).

REMOTE TRIGGER

A remote or foot trigger can be connected to the “Remote Trigger” connector. To activate the remote trigger, the 24VDC reference from pin 1 of the connector must be fed back through pin 4 on the controller.

SAFETY INTERLOCK / E-Stop

The controllers Emergency Stop is accessible through the E-Stop and Remote-Lockout ports of the M12 distribution block.

To satisfy the “Remote-Lockout” (labeled Remote E-Stop on the distribution block), pins 2 and 4 must be shorted. If this connection is opened, then the 24VDC reference for all M12-distribution block ports is lost, and the air supply solenoid is closed.

To satisfy the “E-Stop” (labeled E-Stop/Start on the distribution block), pins 1 and 2 must be shorted. If this connection is opened, then STO on the motor driver is activated.

BAND-IT provides an E-Stop solution: U9020 “E-STOP ASSEMBLY”.

- To use the E-STOP ASSEMBLY box, connect both ends of split signal cable to the remote lockout and E-Stop ports of the M12 distribution block.



CONNECTING POWER TO CONTROLLER

Connect the power cable to the controller and to the factory’s power source.

The controller has multiple switches. The I/O power switch above the plug and the door latch function the same, cutting all power and air to the controller.

Activating E-stop removes air from the tool and power to the motor via STO. The HMI will remain on.

AIR SYSTEM OVERVIEW

PRESSURE SETTINGS

The following system is recommended for tool use.

Table 3 - Recommended Pressure Settings:

Tool	Tie Thickness (in)	System Pressure (psi)
IT80JR	0.024	80 ± 5



Caution: Pressures above the specified settings may cause premature clamp failure and/or tool wear.

TOOL VALVE POSITIONS

On the IT80JR tools, the air harness and valve positions are as follows:

Valve Position	Actuator
2	Cut Extend
4	Clamp Extend
6	Cut Retract

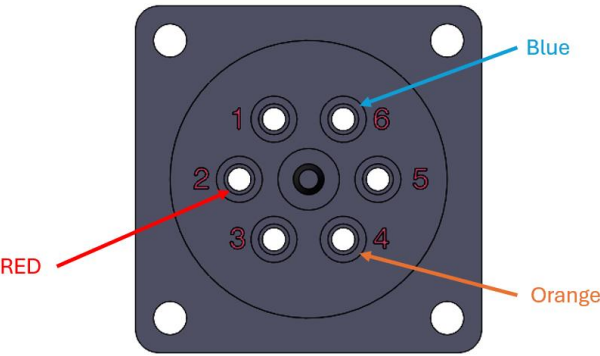


Figure 22. Tool Air Harness Positions.

AIR FLOW TIMING

The following chart shows the cylinder actuation for one complete tie install.

Event description		Tool ready for next tie	Engage gripper	Tension clamp	Cut-off	Eject
Timing / duration		At rest	Entire duration of tensioning tie and ejecting scrap	Entire duration of tightening tie	150 ms (Cut Retract Delay)	Auto Eject Only* (0.5 s)
Clamp cylinder	Extend					
Cut-off cylinder	Extend					
	Retract					

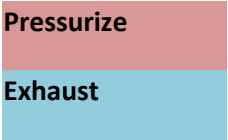


Figure 23

*Scrap Ejection: If the automatic ejection setting is ON (recommended), the tail scrap will be automatically released from the tension wheels after the cut operation to ease in pulling out scrap. Otherwise, the tool will wait for the next trigger press to eject scrap. Note: Regardless of the setting, the scrap will have to be pulled out by hand. See HMI settings to change the setting.

SYNCING TOOL TO CONTROLLER

How to connect or replace an existing tool to the controller:

1. Activate E-stop or turn controller off to disable air and power to motor.
2. Disconnect data and motor cable to current tool (only required if a tool is connected).
3. Disconnect pneumatic tubing harness to current tool (if required).
4. Connect data and motor cable to new tool.
5. Connect pneumatic tubing harness to new tool.
6. Release E-stop or turn controller back on. Ensure Door Latch is in the *On* position.
7. Tool Setup automatically appears (skip step 1), if not go to settings screen (General tab)
 1. Select "New Tool / Maintenance"
 2. Select the Enter Serial Number field
 3. Type in the new tool's serial number
 4. Select "Enter"
 5. Enter "Tool Cycle Count"
 6. Select Maintenance Items that have been performed
 7. Select "Done" then "Yes" to confirm selections
8. Input tool settings (If changing application)
 1. Set system pressure (Refer to settings, page 32)
 2. Set target torque (Refer to settings, page 32)
 3. Set ejection preference
9. Message banner at top of screen should read "Tool Ready" and the tool is ready to use.
If an **error** is shown, press the error reset button.

Note: When powering on the controller, it takes approximately 30 seconds for the system to be functional. Air pressure and motor power will not be activated until after this point.

OPERATION

CLAMP INSTALLATION PROCEDURE

1. Lace the clamp snug around the assembly and locate the buckle in the target location. The clamp should be at least 3 inches longer than the assembly circumference.
2. Band should be applied to a uniform solid surface allowing the buckle adequate support during the clamp installation operation. (See [CLAMP PLACEMENT](#), pg. 30)
3. Insert the tail of the clamp into the tool at a 30° angle from the buckle. The tail needs to be inserted a minimum of 2.5" into the tool.
4. To reduce the risk of jamming, do not activate the tool until the tie is inserted 2".
5. Ensure proper tool orientation (see below).
6. Begin tensioning by pushing and holding down the trigger or by using the remote trigger system. If the trigger is released, the tool will stop tensioning and open the gripper.
7. The tool will continue to run until it reaches the desired tension. At this point the tool will hold tension but not cut the tail until the tool is moved tangent to the work surface and the buckle sensor is active, meaning the buckle is in the correct location and tool is orientated correctly to the buckle. (tangency sensor can be turned off depending on assembly material)
8. Once the tangency and buckle sensors have been activated the tool will complete the cut cycle. (tangency sensor can be turned off, depending on assembly material)
9. Data will be logged onto the controller (and can be downloaded to an external device). The clamp count is updated.
10. After the cycle is complete, remove the scrap tail. The tool is now ready for the next clamp.
11. Cut off scrap tail can be recycled according to local regulations.

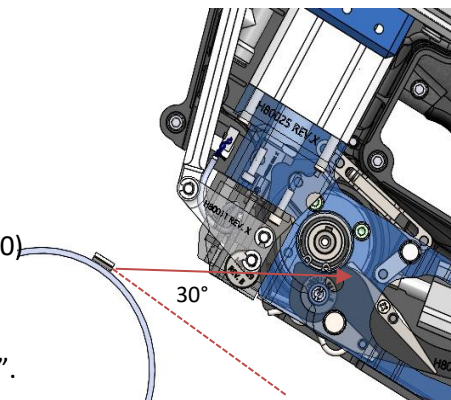


Figure 24

Note: A blinking **red** LED signifies an error during install. Check the error message on the HMI and verify the clamp was installed correctly.

TOOL OPERATION

The starting tool orientation should be rotated back to allow for the front corner of the buckle to hit first. Go straight into the buckle with the tool in this orientation.

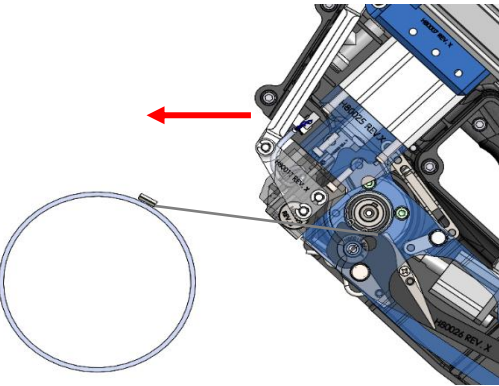


Figure 25

Continue to install the band until it reaches full tension in the orientation shown. Once the LED is solid yellow, rotate the tool to be tangent to the work piece and buckle.

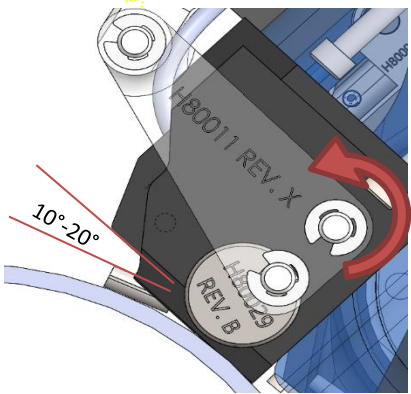


Figure 27

Once the tangency sensors are activated the LED will turn green and the tool will cut the band.

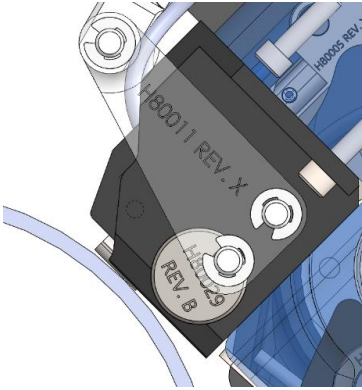


Figure 26

TIE INSPECTION

The IT80JR forms a locking tab into the JR Clamp when cutting the remaining tail off. When installing a JR Clamp, a visual check is recommended to verify the presence of a locking tab.



Figure 28. JR Clamp locking tab

CLAMP PLACEMENT

Buckle location is critical to clamp performance. Use the following guidelines as a reference.

- Do not install clamps at an angle (Fig. 30)
- Buckle locations cannot be over air gaps (Fig. 32)
- Avoid sharp corners, add largest radius possible on square corners (Fig. 31)
- JR Clamps can be installed on flat surfaces
- Do not install clamps on tapered surfaces or on tube bends (Fig.31)
- The buckle area of the shield must be free of voids and wrinkles

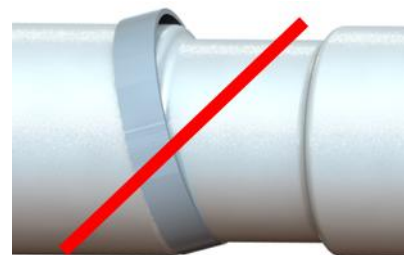


Figure 29

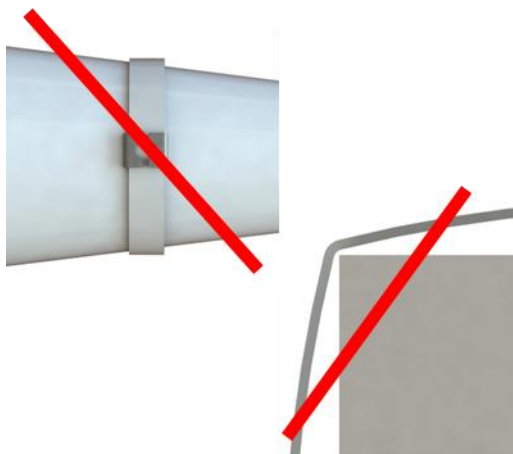


Figure 30

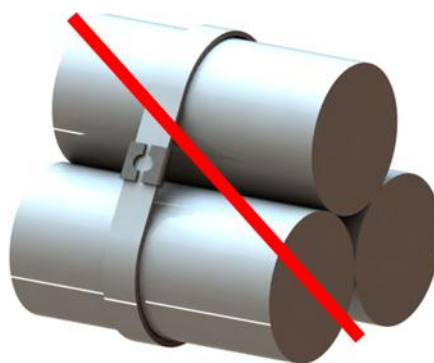


Figure 31

MOUNTING AND FIXTURING

At a minimum BAND-IT recommends that the tool be connected to a tool balancer or connected to an ergonomic lift assistance arm.

Tool Balancer

- The tool needs to be located directly above the clamp location if using a balancer as shown below (Figure 37 & Figure 36).
- The balancer must support the weight of approximately 10 lb.
- The tool comes with a hanger loop to mount to a balancer.
- For more complex installations there are three mounting holes on the side. See page 26 for more information about controlling the tool in roll and yaw.
- Note that the center of gravity is behind the hanger bracket. For best performance, the pivot point should be located on the CG, not directly on the hanger bracket. (Fig. 33)

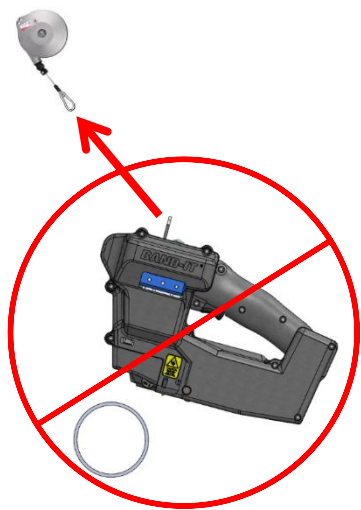


Figure 34



Figure 33

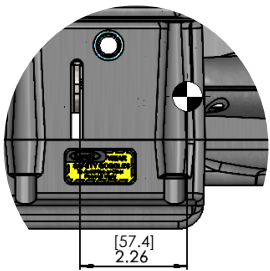


Figure 32

Tool Balancer Cont.

If multiple ties are installed with the same tool, a slide rail or swing arm is required to move between the ties. Always allow the tool to hang directly above the installation. Pulling the tool at an angle will cause increased strain on the operator. Figures below are an example of a weight balancer that can rotate in all 3 axis. Depending on the application, the harness can either be routed up the balancer or at ground level. For technical drawings or further information about this design, contact your account manager.

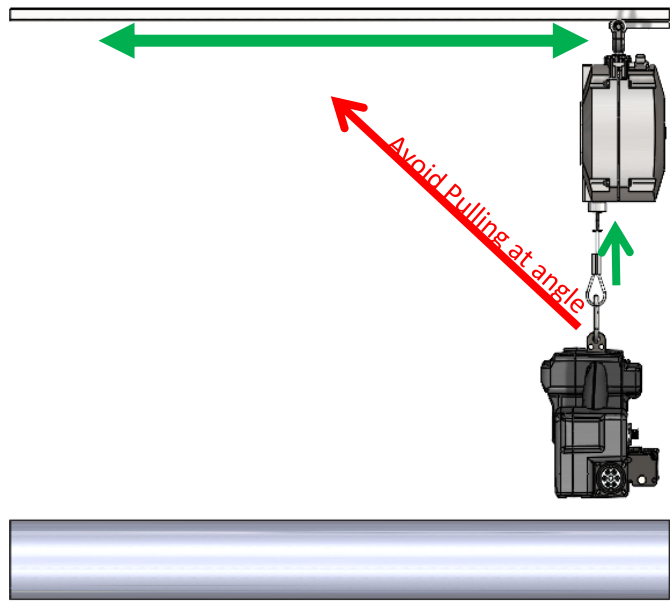


Figure 35

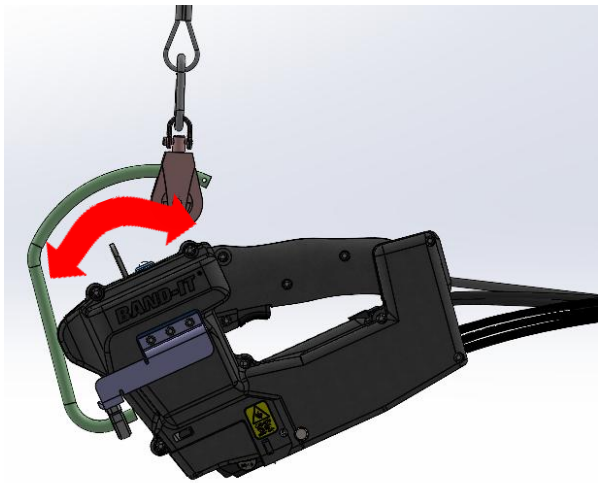


Figure 36

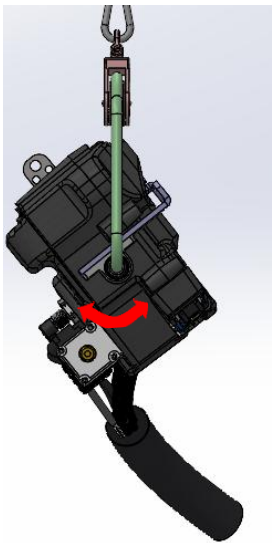


Figure 37

Recommended Setup: For the most ergonomic design, we recommend mounting the tool on an articulating arm or fixture.

Articulating Arms

- Three 10-32 mounting holes are provided to attach the IT80JR to an articulating arm.
- The arm must be able to support approximately 10 lb. in addition to any brackets installed to the tool.
- See page 26 for more information about controlling the tool in roll and yaw.
- See Figures below for two examples of articulating arms.

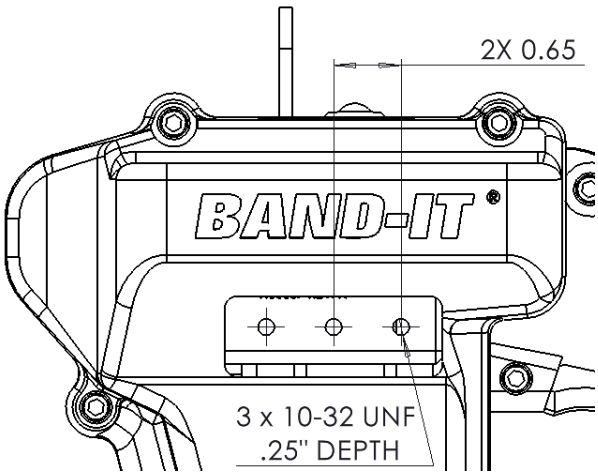


Figure 38

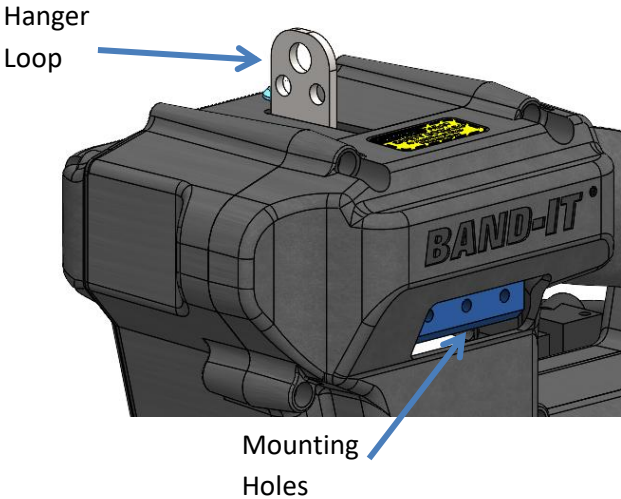


Figure 39

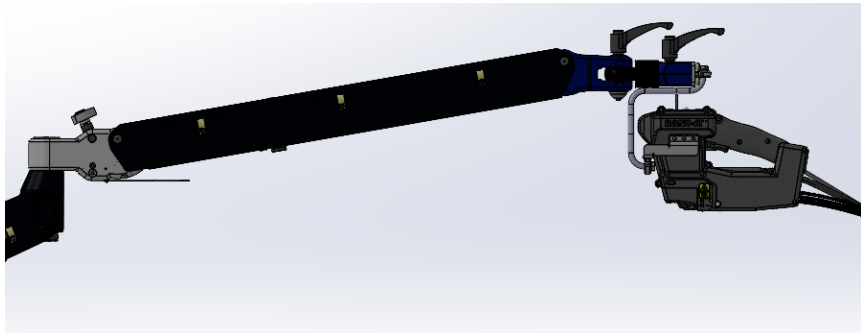


Figure 40

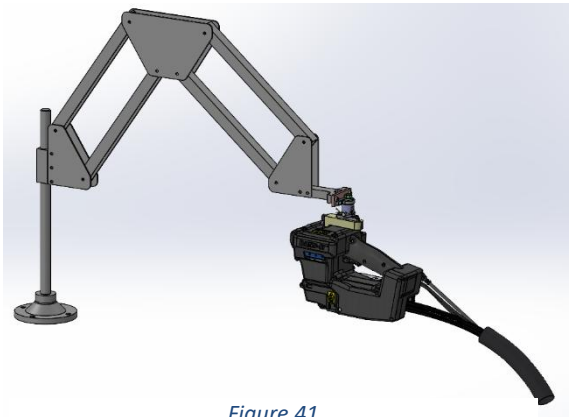


Figure 41

TOOL ROTATION

The tool may have to rotate in all three axes of rotation depending on the application (Figure 46).

Pitch is required for all setups, as this rotation is required to ensure the buckle is installed tangent to the work piece. A minimum of 30° of rotation is required for the tool to operate, but 120° is recommended. The tool should be allowed to rotate both forwards and backwards from the tangent point the buckle is expected to be placed. See Figure 45 for the minimum rotation away from the buckle.

Yaw is typically required if the tool is installing more than one clamp, especially if the tool is on a swing arm or articulating arm. 180° of rotation is recommended, 90° in each direction from straight on.

Roll is required on applications that have clamp(s) at different angles. Depending on the application, 90° of rotation is recommended.

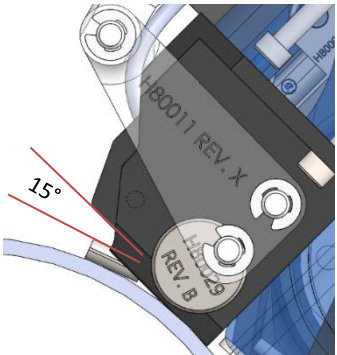


Figure 42

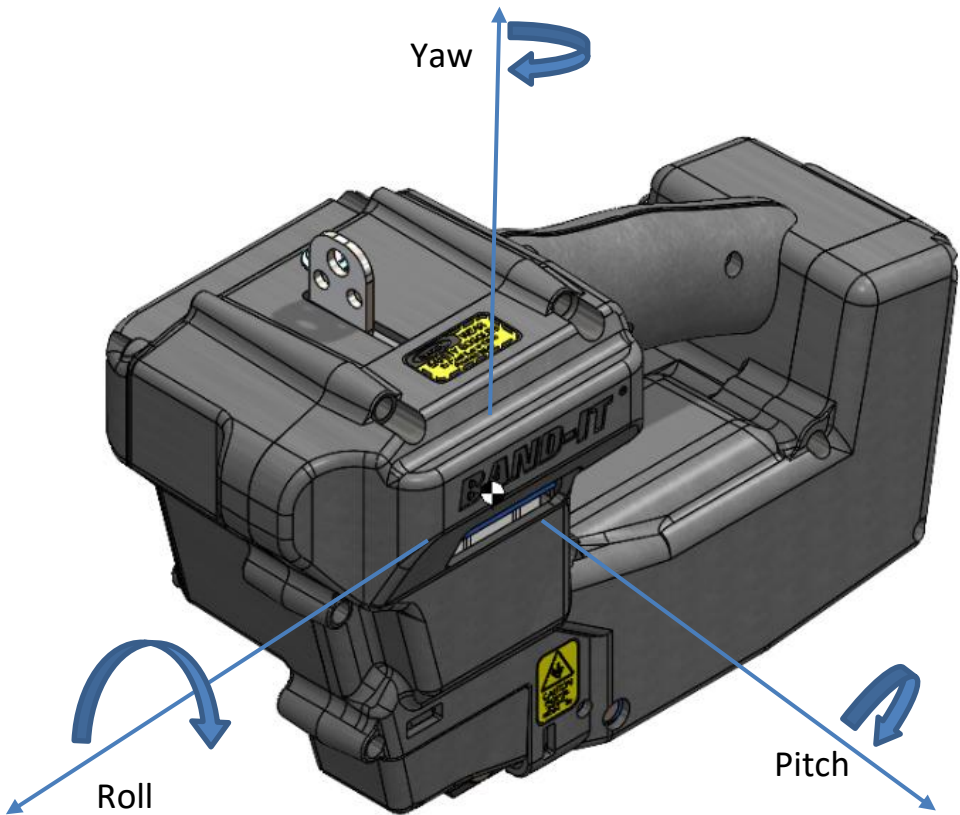


Figure 43

CENTER OF GRAVITY

The center of gravity (CG) is shown below in relation to the hanger loop and mounting holes. The closer the rotational point is to the CG, the easier the rotation will be.

If roll is required for the application, centering the rotation around the roll axis is the top priority. Followed by pitch and then yaw.

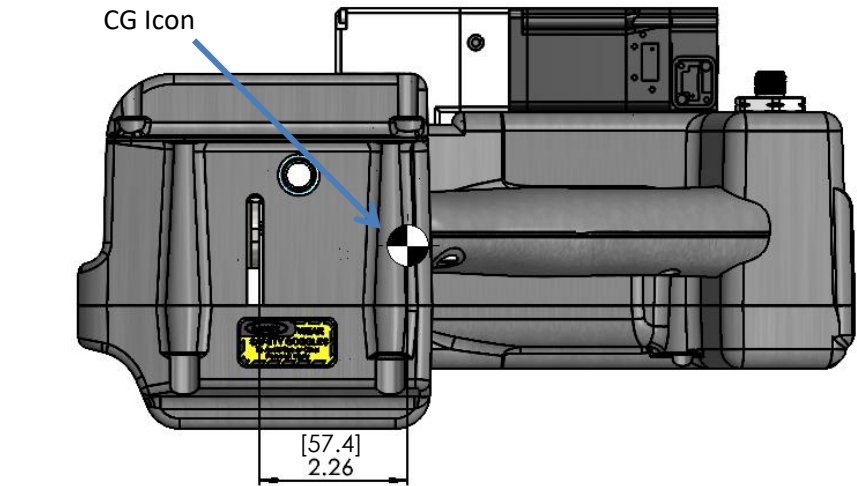


Figure 45

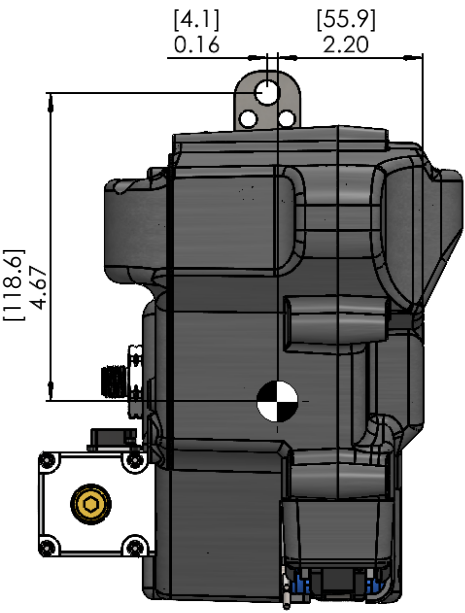


Figure 46

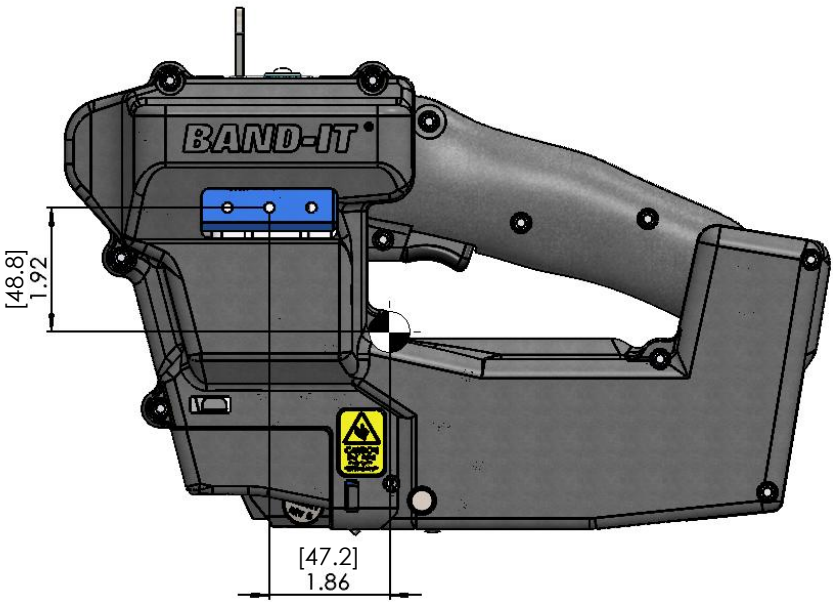


Figure 47

MOUNTING EXAMPLES

Figures below are an example of an articulating arm and mounting bracket that can rotate in all 3 axis. For technical drawings or further information about this design, contact your account manager.

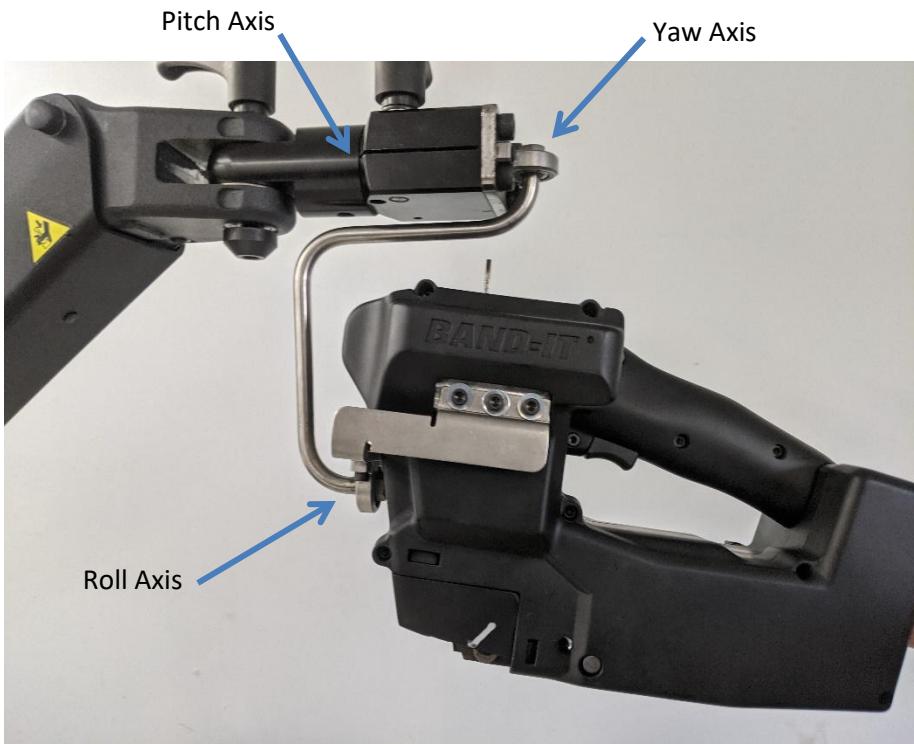


Figure 48



Figure 49

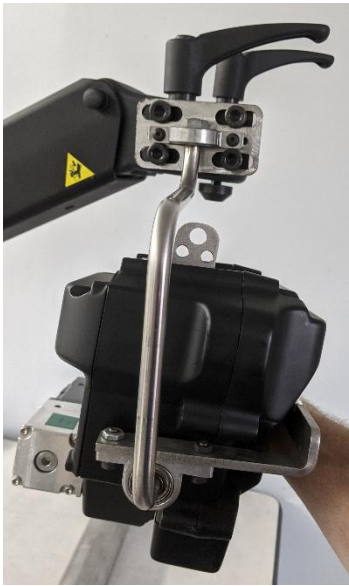


Figure 50



Figure 51

For applications where roll is not required, a bracket with Pitch and Yaw control can be used (Figure 55).

Note that the center of gravity is behind the hanger bracket. For best performance, the pivot point should be located on the CG, not directly on the hanger bracket.

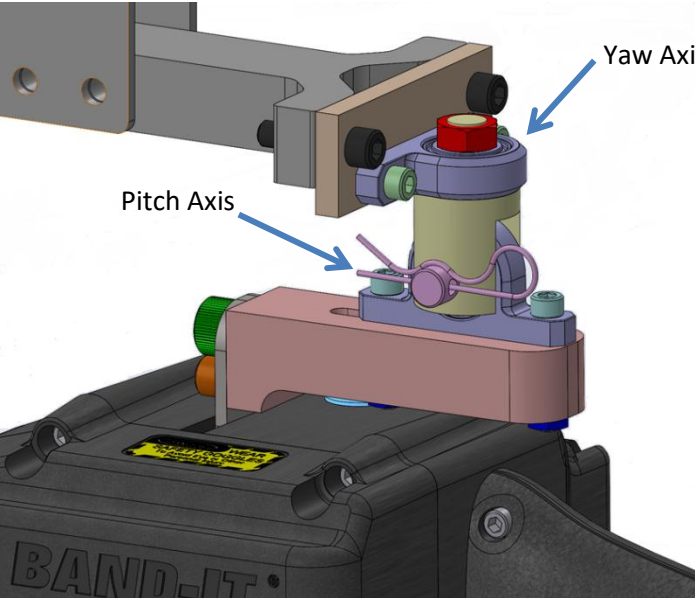


Figure 53

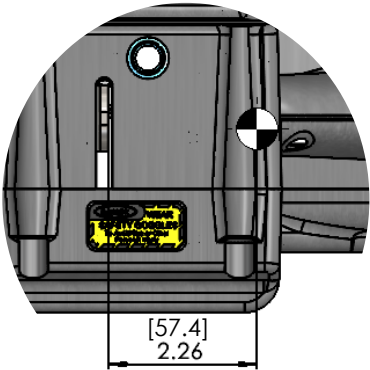


Figure 52

HARNESS ROUTING

It is recommended to run the pneumatic/electrical harness down the length of the articulating arm. This will keep the harness out of the way and protect it from being damaged. Ensure that there is enough slack in the harness to not bind as you maneuver the tool.

Note: the harness will stick approximately 2" (51 mm) behind the tool if the harness is routed as shown below.

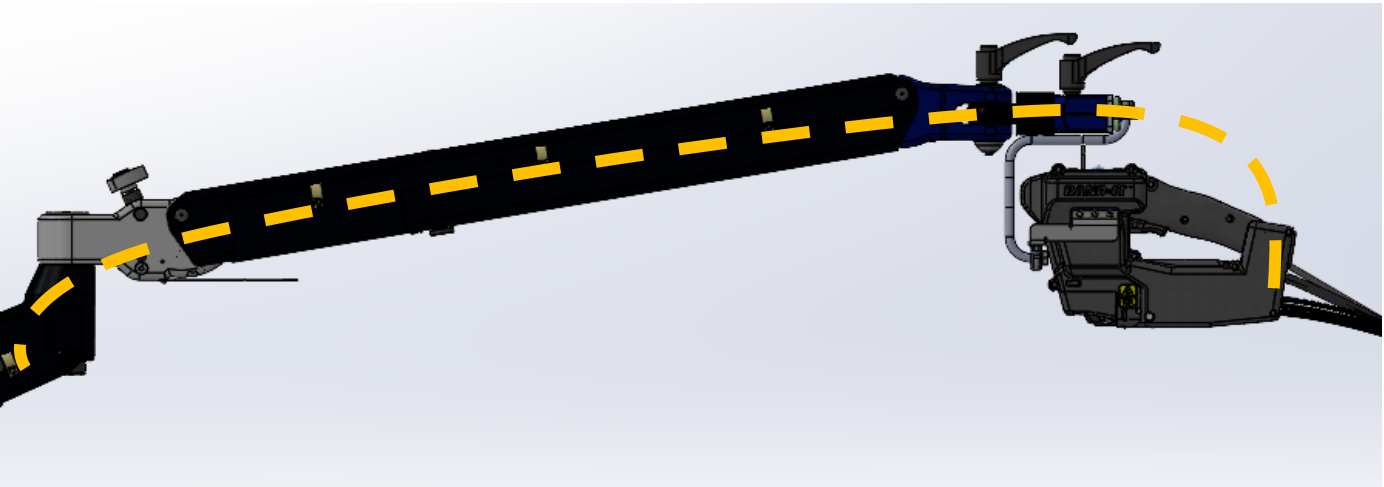


Figure 54

TOOL CLEARANCE REQUIREMENTS

Minimum Clearance Requirements

Dimension	Description	IT80JR (in [mm])
A	Channel Height (max)	0.25" [6.4mm]
B	Head Width (min)	0.85" [21.6mm]
C	Centerline Distance to Flange (min)	1.00" [25.4mm]
D	Tool Width	5.50" [139.7mm]

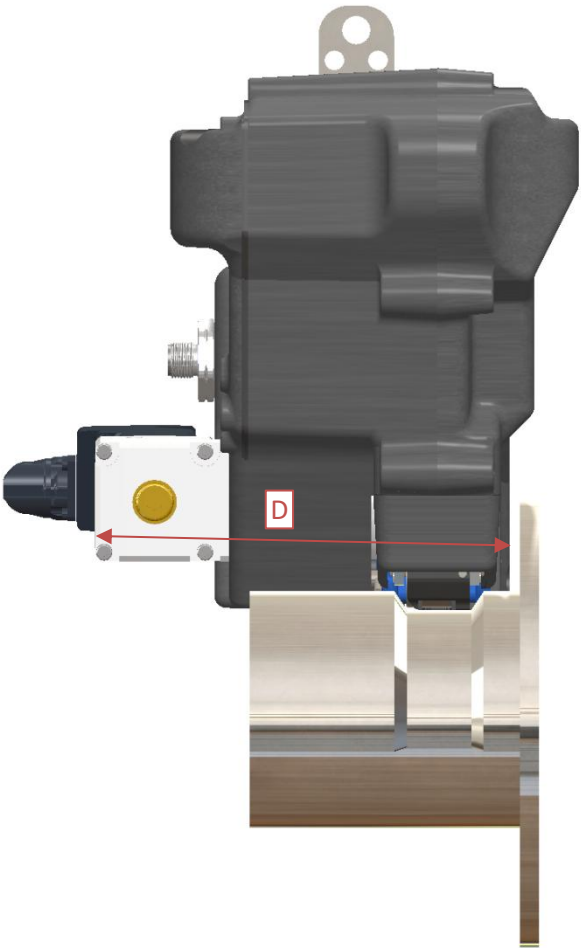


Figure 55

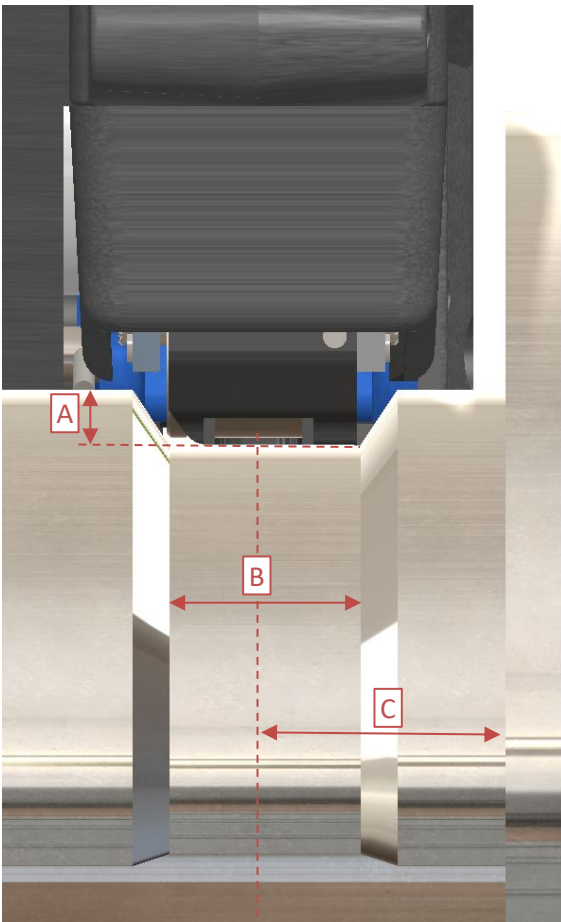


Figure 56

SENSOR ACTIVATION

Note: the tangency sensor is only activated on metallic objects. If installing on plastic, rubber, etc., the sensor will need to be disabled. (pg. 44)

To ensure proper sensor activation, the channel area where the buckle is placed must be void of dimples and folds. If using a foil shield, it is recommended to have a 1"x1" (25mmx25mm) coined or stamped section without wrinkles where the buckle will be placed. Note the location of the tangency sensor that is activated by sensing the installation surface.

To verify the sensors are activating properly, the *Manual* screen on the HMI has two indicators that light up when the buckle and proximity sensors are activated. (pg. 43)

If the sensors are activated improperly without metal near the sensors, first clean the sensors to ensure there are no metal shavings interfering with the sensor. Then verify the sensor location. They should be depressed .005-.010" into the tool head.

If the sensors are still malfunctioning, verify the electrical connections.

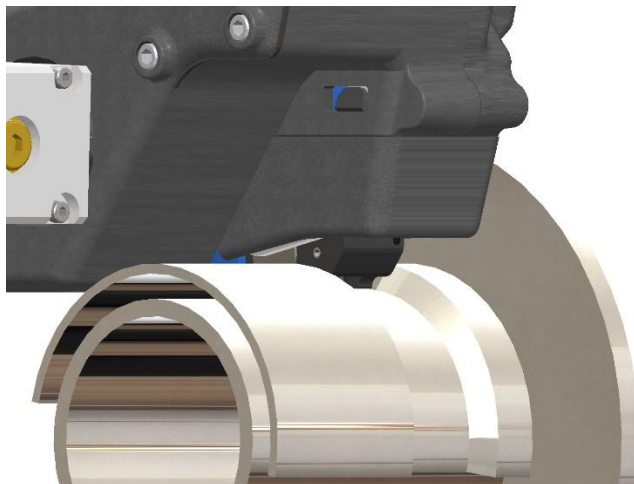
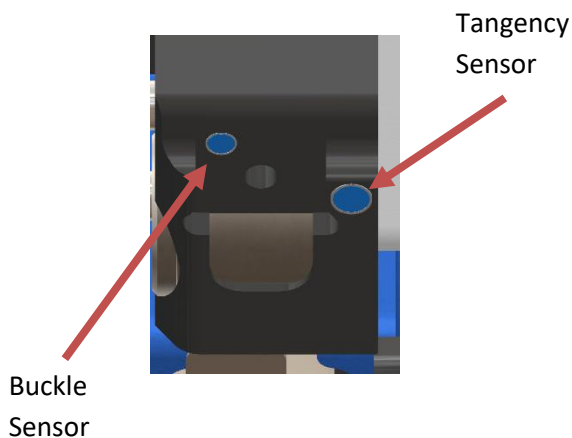


Figure 57



REMOTE ACTUATION

The IT80JR can be remote actuated with a foot pedal or palm buttons via the remote trigger 4 pin connection on the side of the box (Figure 11). If using the Mencom yellow cable supplied with the controller, the brown to white pin connection needs to be closed to activate the tool. The external trigger setting also needs to be "On" in Settings. (See Settings Screen – General, pg. 44) Contact BAND-IT IDEX for recommendation on remote triggers.

CUT-OFF SIGNAL

The IT80JR can send a "cut-off" signal similar to the IT6000/IT1000. Instead of being triggered by the pressure difference inside the tool, the controller will send the signal when a clamp has been installed and did not fail any verification checks. A use case of this would be to count the number of clamps installed on an assembly. The connector is located next to the remote actuation on the controller. If using the Mencom yellow cable, measure the signal across the white and blue wires. Contact BAND-IT IDEX for recommendations on how to setup the cut-off signal.

FACTORY PROGRAM SETTINGS

See page 37-40 for additional information about these settings

Table 4

		Value
	Tab	IT80JR
General	Target Torque	55%*
Setpoints	Min Supply Pressure	75 PSI
	Max Supply Pressure	85 PSI
	Torque Tolerance	0.10 in-lbf
Timing	Line Up Tool Timeout	10 s
	Position Sensors Debounce	0.01 s
	Cut Off Delay	0.05 s
	Auto Eject Duration	0.5 s
	Cut Retract Delay	0.20 s
Speed	Max Tension Speed	50%

*Recommended IT80JR target torque is 55% for optimal component life and performance. For additional clamping performance, target torque can be set to a maximum of 80%.

SOFTWARE AND ELECTRONICS

HMI OVERVIEW

See detailed information about each HMI page below.

For pages requiring admin login, the factory-set password is “admin”. This password can be changed by the user. If the password is changed and forgotten, the backup password “dmc” is hard-coded into the controller.

Device Start Up

When the tool is first powered on, the previous screen will appear for 20 seconds, then a blank screen with an hour glass icon will appear for 5 seconds and finally the New Tool / Maintenance Screen. The tool will not function until the New Tool / Maintenance window is cleared.

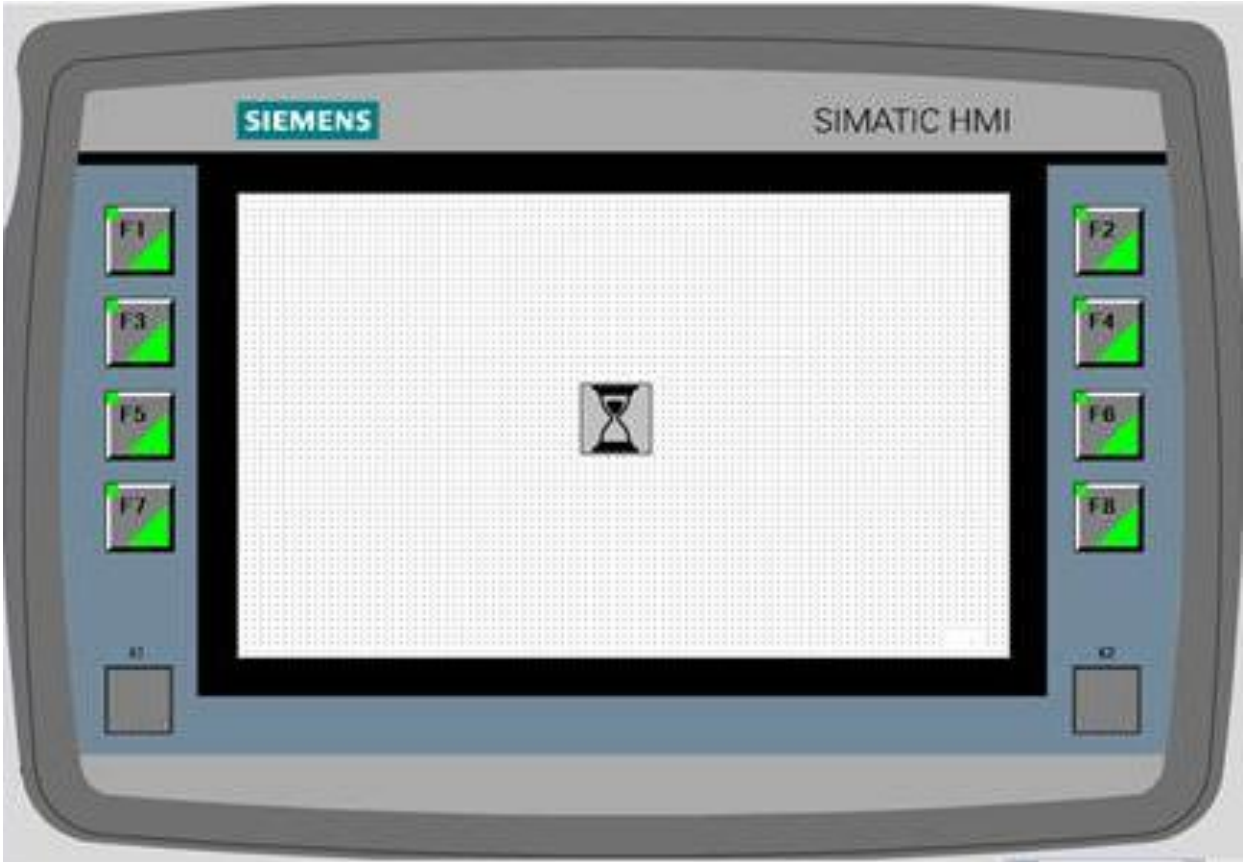


Figure 58

Home Screen

- Status Banner *Tool Ready*: Shows status of tool and error codes if applicable
- Clamp Count: Increments every install. Resettable in *Settings*, not tied to a specific tool.
- Lifecycle Count: Increments every install, a controller count, not resettable.
- System Pressure: Pressure reading off input regulator, controls the cylinders
- Motor Torque: Instantaneous motor torque
- Motor Torque Target: target final torque
- Serial Number: Serial number of the tool, tied to the motor. Can only be changed when switching motors.
- Tool cycle Count: Cycles on the current serial number, resettable when first connecting to a tool.
- Error code Count: Count of errors, can be reset in *Settings*.
- Log In / Log Out: Allows/Prohibits access to the *Settings* tab.
- Service: Brings up the Maintenance Interval window
- Reset Clamp Failure: Resets any error on the top banner
- Buckle Sensor: “Enable” or “Disabled” shows sensor status. Gray circle changes blue when sensor active
- Tangency Sensor: “Enable” or “Disabled” shows sensor status. Gray circle changes blue when sensor active

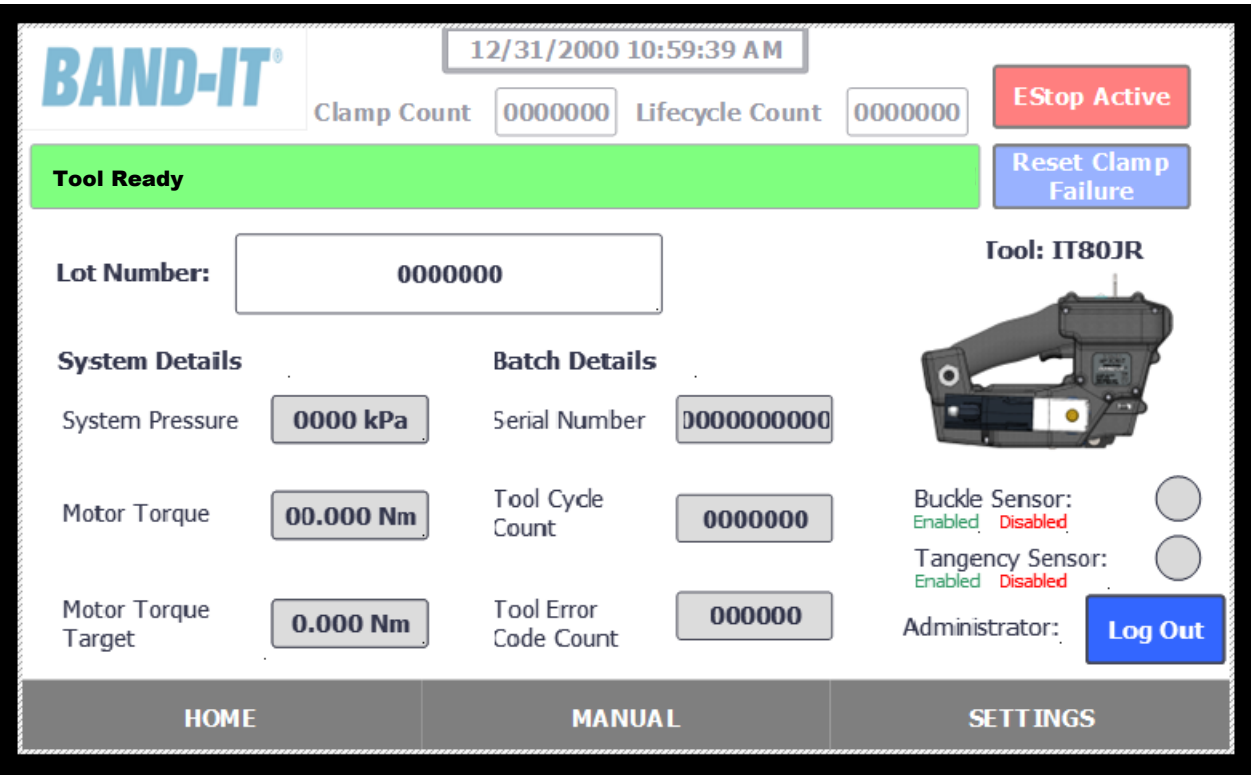


Figure 59. Home Screen.

Manual Screen

Enter Manual Mode: Turns on Manual Mode. Allows individual cylinders and the motor to fire independantly for troubleshooting. This will prevent the tool from operating when the trigger is pulled. Manual Mode needs to be selected for the functions on this screen to work.

Note: Manual mode will stay activated if you leave the “Manual” screen. The tool will not install a clamp in this state. E-Stop and Device Errors can NOT be cleared while in Manual mode. An LED on the F1 button will blink to alert you that the tool is still in manual mode.

Pull Band: Rotates the motor to pull the tie into the tool. The motor runs at the speed indicated next to Torque Move.

Release: Rotates the motor to push the tie out of the tool. The motor runs at the speed indicated next to Torque Move.

Torque Move: Rotates the motor to pull the tie into the tool until the torque indicated in the changeable field is reached.

Cylinder Extend/Retract: Fires each cylinder independently, either extending or retracting.

System Pressure: Shows the current system pressure

Contact Switches/Trigger Indicators: The round indicators will light up blue when the contact switch sensors or trigger are activated respectively.

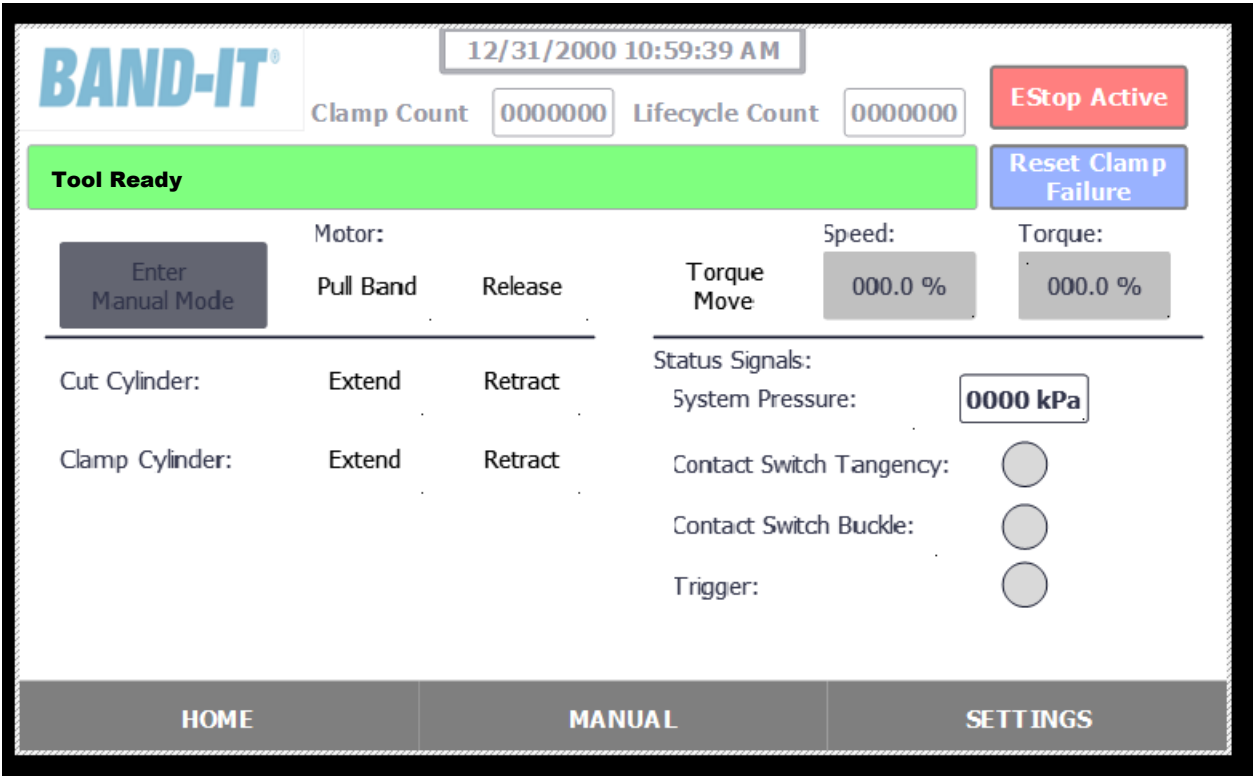


Figure 60. Manual Screen.

Settings Screen – General

- Lot Number: Adds a lot number to the data stored
- New Tool / Maintenance: Used when changing to a new tool, see Tool Setup Window,pg. 52 for a detailed overview.
- Choose File: Selects the clamp install data file or Maintenance History file you want to upload.
Clamp Install Data File format is “TOOLSERIAL# MM_DD_YYYY”.csv
Multiple cycles are stored to each data file, typically a full days’ worth of installs.
Maintenance History File format is “Maintenance_History”
- Copy Log to USB: transfers the selected file to USB flash drive if installed. If a duplicate file name is already on a USB stick, the current file will be over written with the latest version.
- Enable Contact Switch: double tap On/Off switch to enable or disable the tangency and buckle sensors.
- Eject Mode:
Auto: Activates the motor for a preset time after the cut to eject the tail
Manual: does not run the motor after cut.
- Units: Changes between Metric and English units
- External Trigger: The tool will respond to the trigger when off, or the remote trigger connected to the controller when on.
- Reset Cycle Count. Resets the Clamp Count on the top of the screen
- Exit runtime: closes the program and goes to the home windows screen.
- To update date and time on the HMI: Exit Runtime -> Settings -> Date/Time -> Restart Runtime

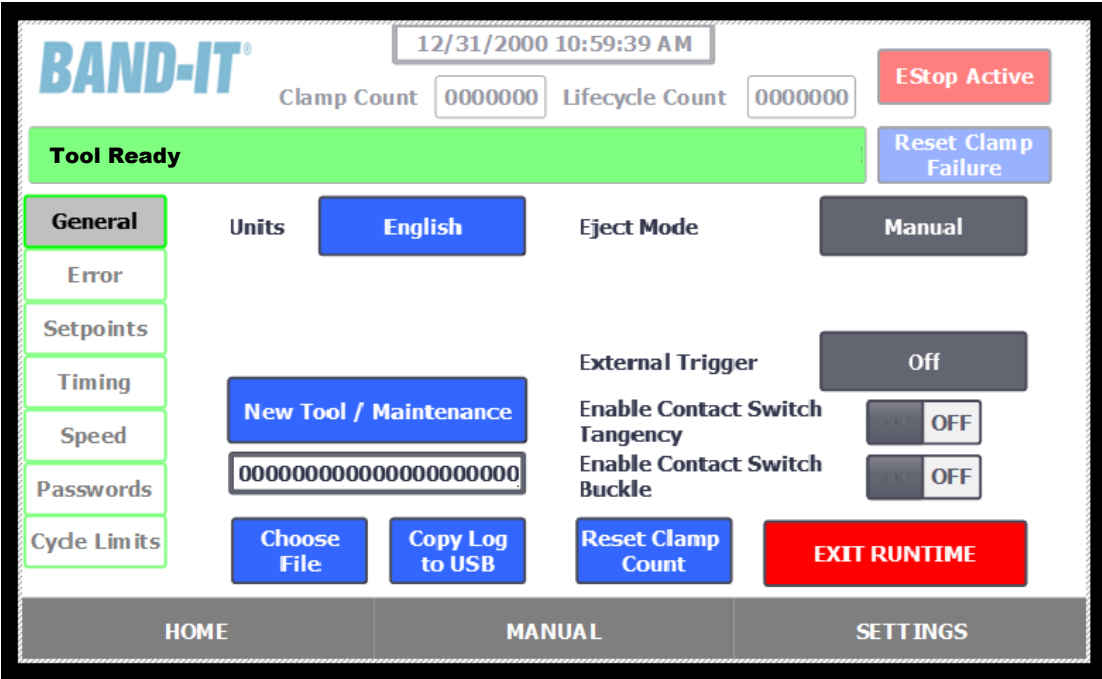


Figure 61. Settings Screen - General.

Settings Screen – Error

Error bypass – Automatically resets errors without hitting *Reset Error*

Enable Error Codes Passcode – Requires a passcode to clear an error

Error Codes to Require Passcode – Number of errors in a row before the passcode is needed.

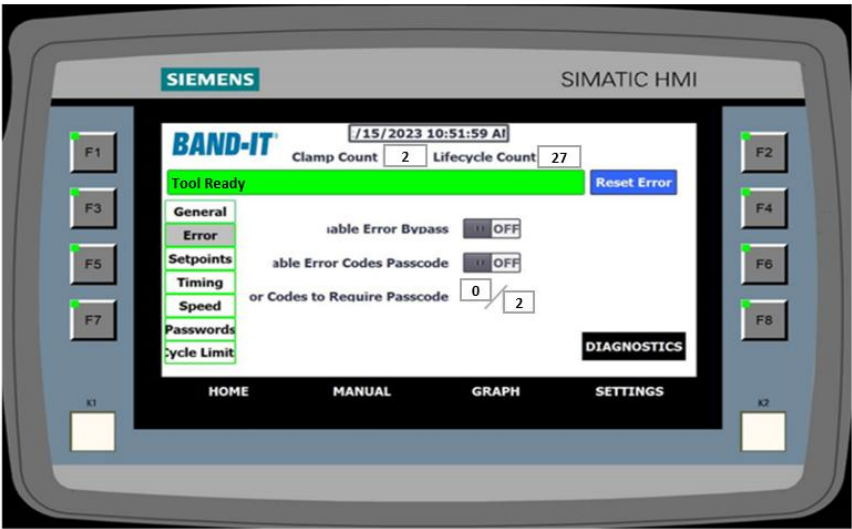


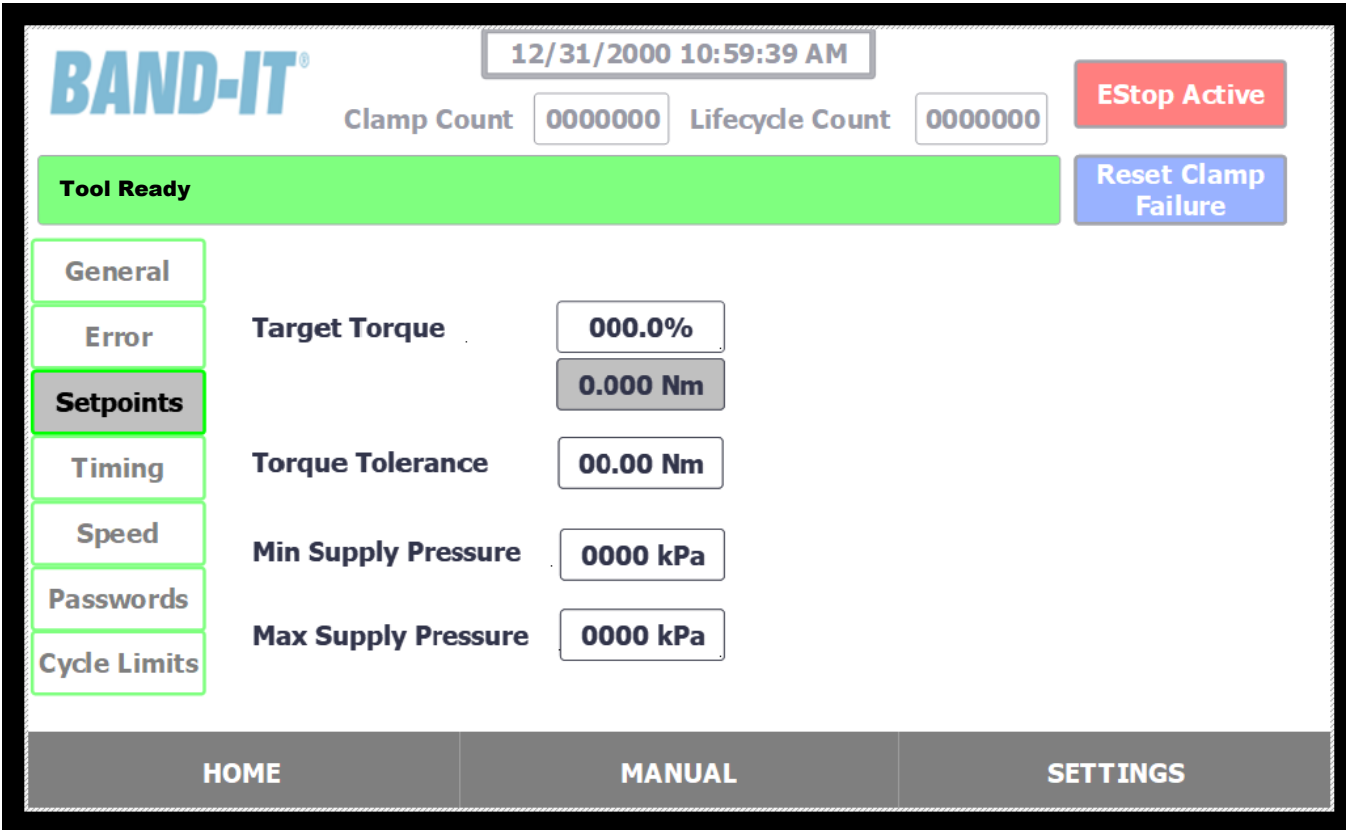
Figure 62. Settings Screen – Error.

Settings Screen – Setpoints

Min/Max Supply Pressure – Prevents tool from operating outside the settable supply pressure range

Target Torque: Percent of max torque the tool tensions the band with.

Torque Tolerance – Tool will give error if cycle torque is outside of target torque.



Settings Screen – Timing

Line up tool timeout – Time before error between when tension is reached and when the proximity sensors are activated.

Position Sensors Debounce – How long the proximity sensors need to be in position before the tool completes the cycle.

Cut off delay – Delay tension and cut

Auto Eject Duration – Time the tool runs after cut (if automatic ejection is enabled)

Cut Retract Delay – Time the cut cylinder is extended.

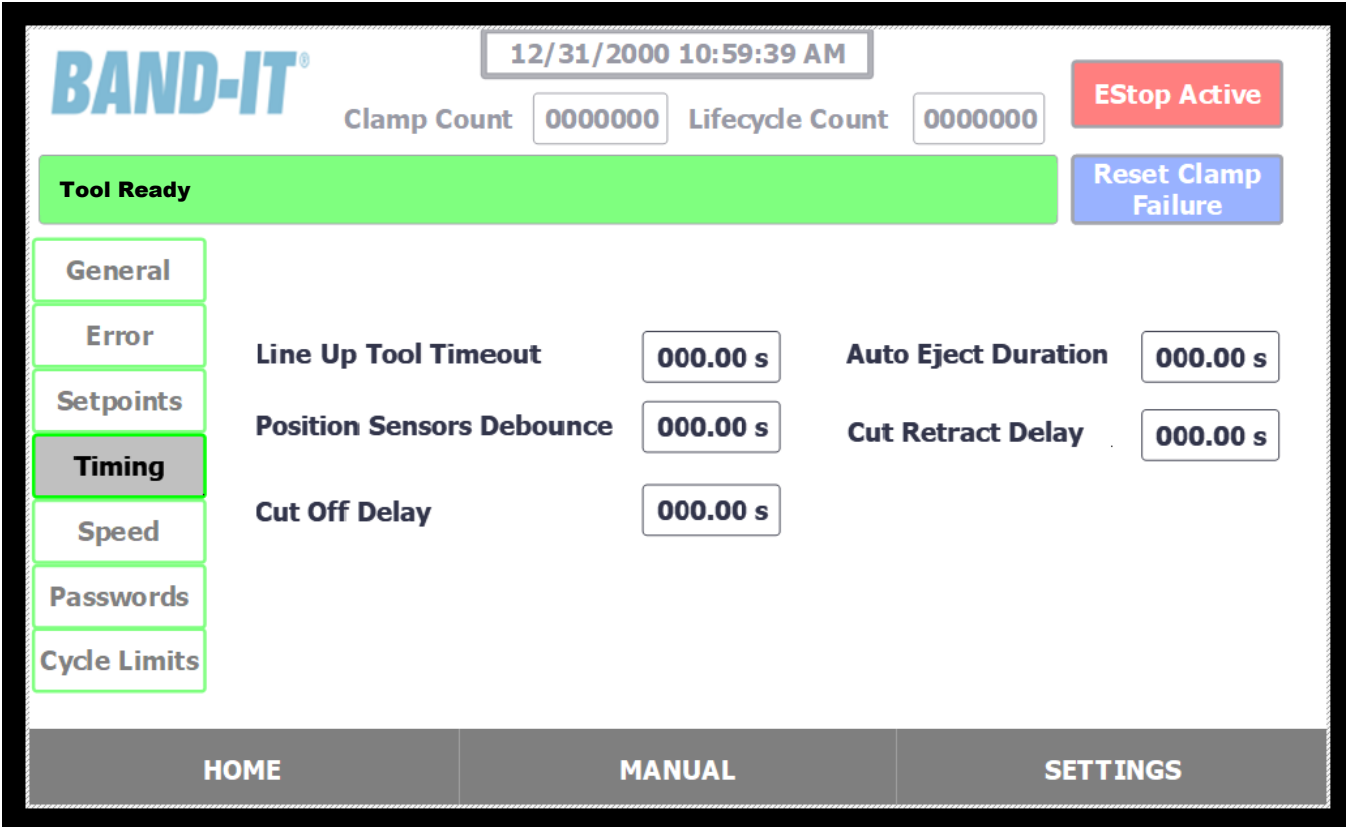


Figure 64. Settings Screen - Timing.

Settings Screen – Speeds

Max Tension Speed – Speed of tool during installation

Slow speed – For standard operation, slow speed is not used.

Eject Speed – Speed of ejection (if automatic ejection is enabled)

Manual Jog Speed – Speed of motor jog in manual mode.

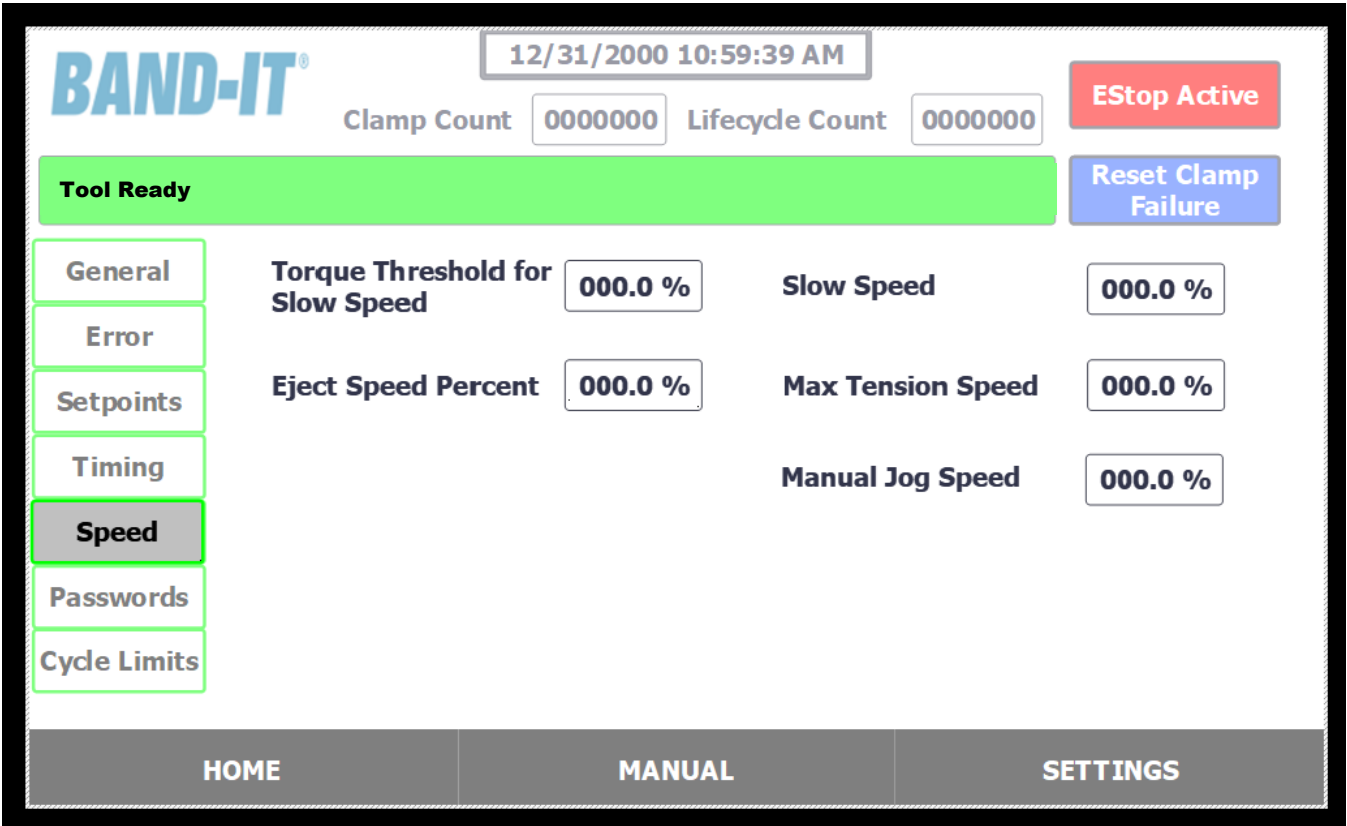


Figure 65. Settings Screen - Speeds.

Settings Screen – Passwords

Error Acknowledgement Password: Requires a password to *Reset Error* (Optional)

Settings Administrator Password: Password required to access the *SETTINGS* tab. Password screen will pop up if *Log In* is attempted on the *HOME* screen.

Auto logout is available for both passwords and the time limit before the logout happens is adjustable.

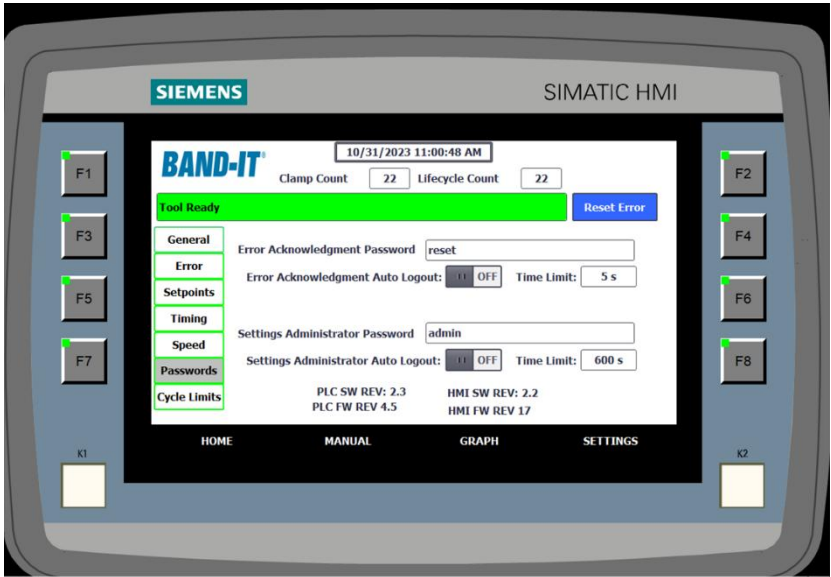


Figure 66. Settings Screen - Passwords.

Settings Screen – Cycle Limits

The recommended maintenance intervals for the Maintenance Interval window.

Values can be adjusted from the settings screen.

Data Record Name window and Export/Import icons are used for cycle count backup during software updates.

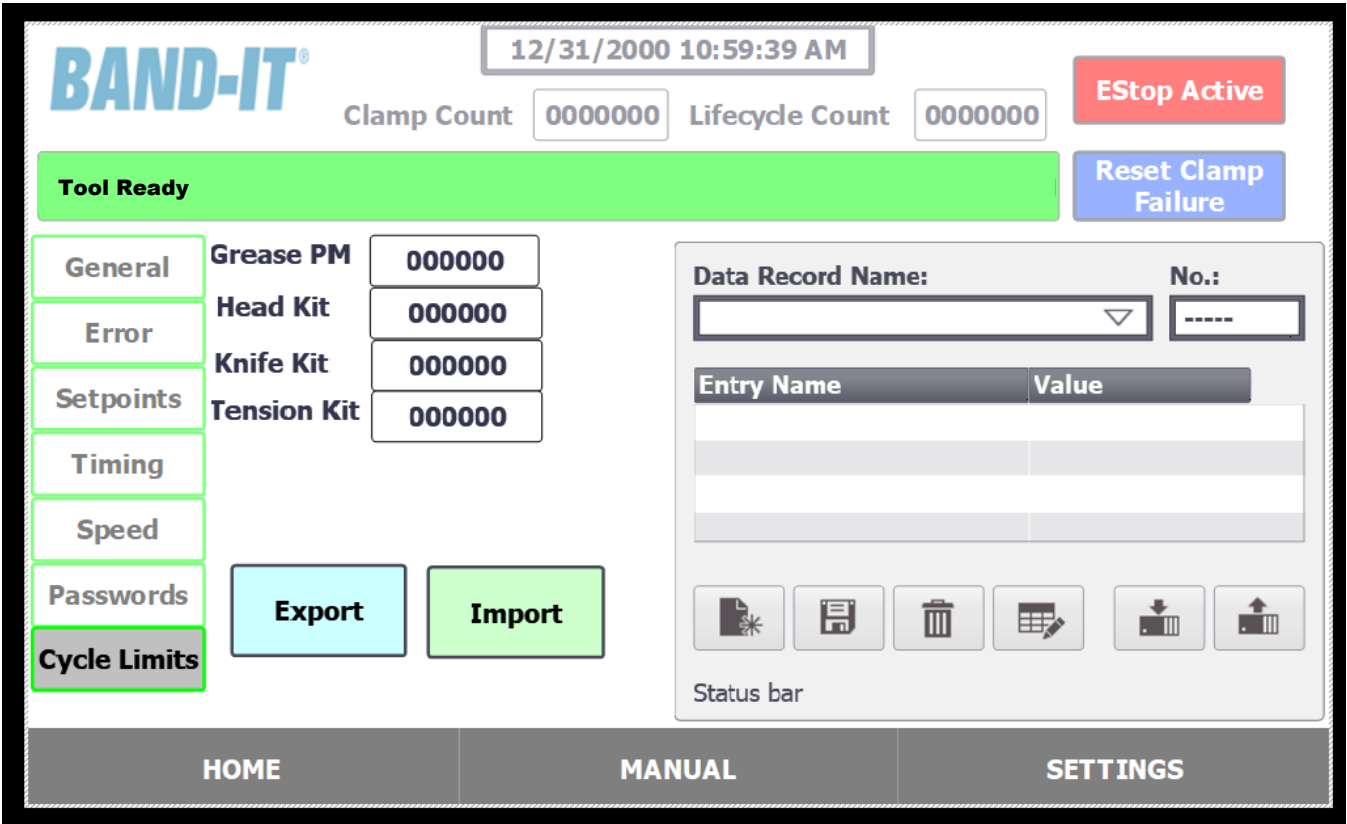


Figure 67. Settings Screen - Cycle Limits.

Maintenance Interval Window

When you select the “Service” button in the top right of the screen, the Maintenance Interval window pops up.

If the “Current Cycles” count is greater than the “Reccomended Cycles” count for any of the listed items, the service button and item label will turn YELLOW to signify required maintenance.

If “Current Cycles” is greater than 1.5X the “Recommended Cycles” the service button and item label will turn RED to signify risk of damage to tool and components if use is continued.

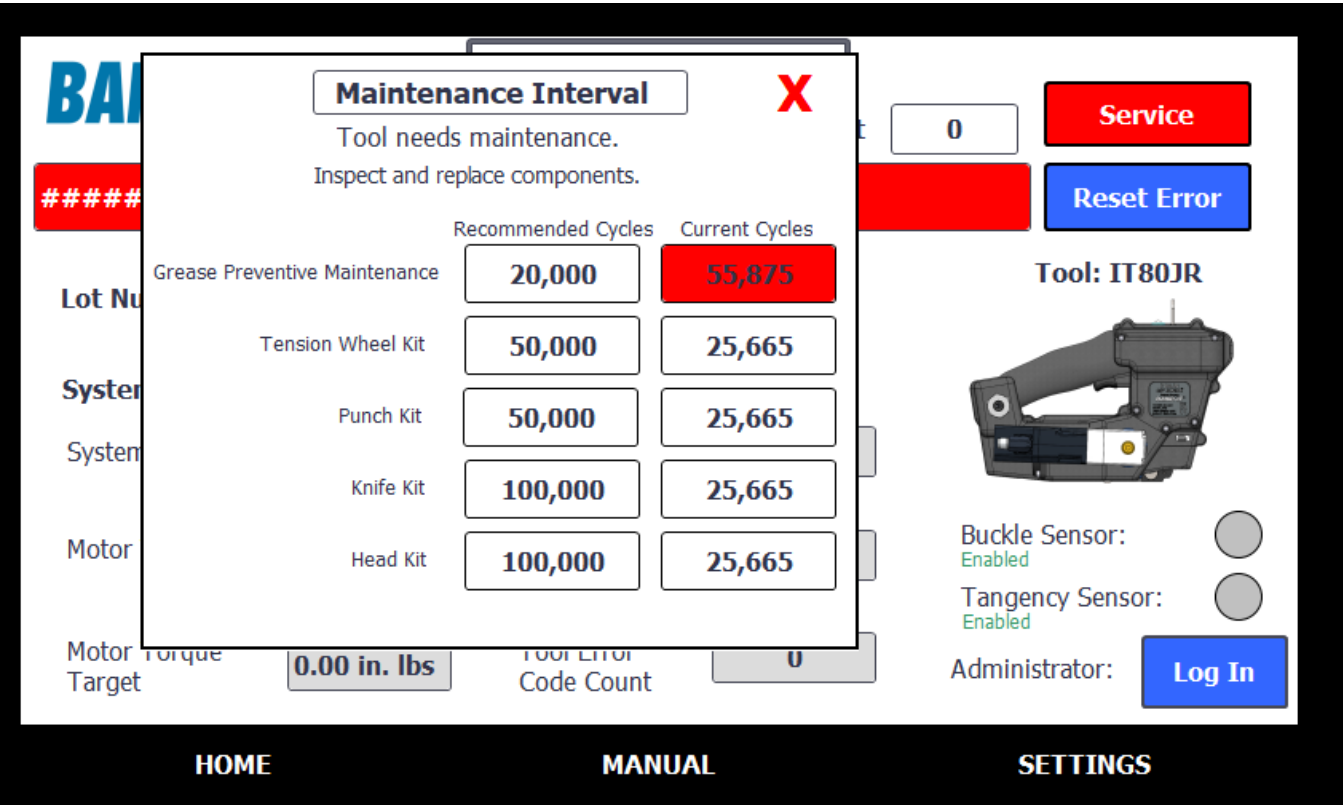


Figure 68. Maintenance Interval Window.

Tool Setup Window

Screen pops up when the “New Tool / Maintenance” button (Settings > General) is pressed and at start up of device.

If the tool has not been changed select “Tool Not Replaced”.

If the tool has been replaced, enter the tool serial number, select which maintenance items have been executed (a white X appears in the left column), select “Yes” to confirm maintenance items.

If “New Tool / No Maintenance” is selected, the other fields can not be selected.

If “Other” is selected, a new window will pop up to manually enter what maintenance has been performed with a 254 character max.

Select “Done” to close the Tool Setup Window

Tool Setup

Step 1: Enter and Confirm tool serial number.

Step 2: Select all that apply from maintenance list and press Done OR press Tool Not Replaced.

Enter Serial Number: 99998

Tool Not Replaced

	New Tool / No Maintenance
	Grease Preventive Maintenance
	Tension Wheel Kit Replaced
	Punch Kit Replaced
	Knife Kit Replaced
X	Head Only Kit Replaced
	Head Assy Kit Replaced
	Other

Tool Cycle Count 50

Confirm Selections?

NoYes

This Action Cannot Be Undone

Done

Figure 69. Tool Setup Window.

HMI Physical Buttons

The HMI Screen has physical buttons to the sides of the touch screen. Figure 74 shows the settings for those buttons.

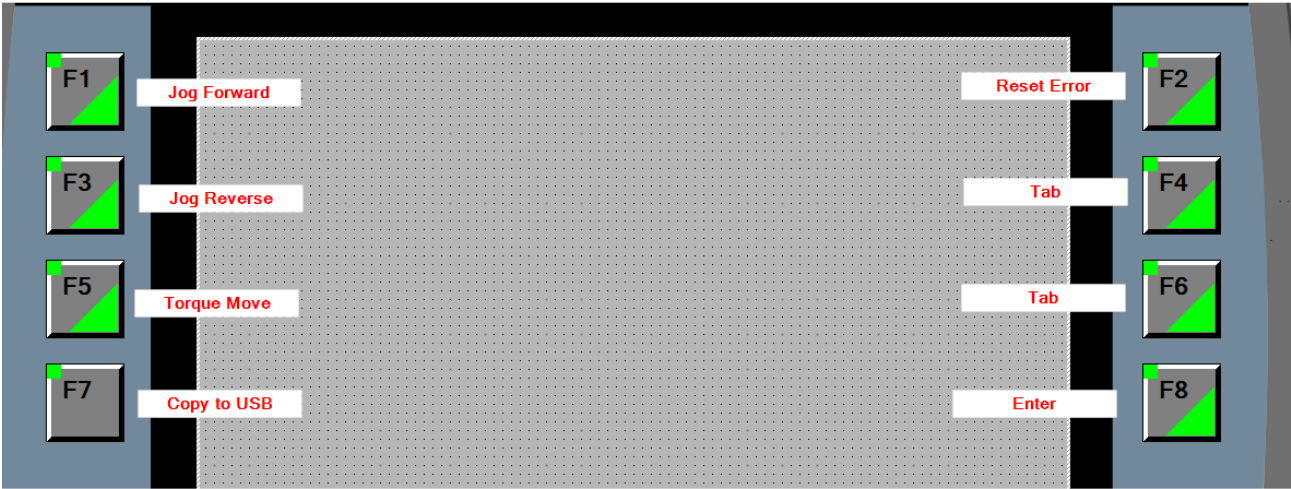


Figure 70. HMI Physical Buttons Overview.

FILE MANAGEMENT

Log files are stored on an SD card inside the HMI. The contents of the SD card can be viewed/modified through the HMI’s embedded operating system.

Windows Embedded File Manager

To access the file manager, you must first close the HMI Runtime from the Settings -> General page. Tap the red “EXIT RUNTIME” button. This will bring up the Windows Embedded desktop and the HMI Runtime Start Center. Now double-tap “My Device” in the top-left corner of the desktop.

Select the SD Card by double-tapping the drive labeled “SD_X51”. The contents of the HMI’s SD card are now displayed.



Figure 71. Windows File Management.

Deleting Files

Select file(s) you wish to delete. You can select multiple files by dragging a box, originating from a blank area of the window. With the file(s) selected, tap File -> Delete. Accept the Confirm Delete prompt to permanently delete the files.

CAUTION! This will permanently delete the file, it will not move it to the Recycle Bin.

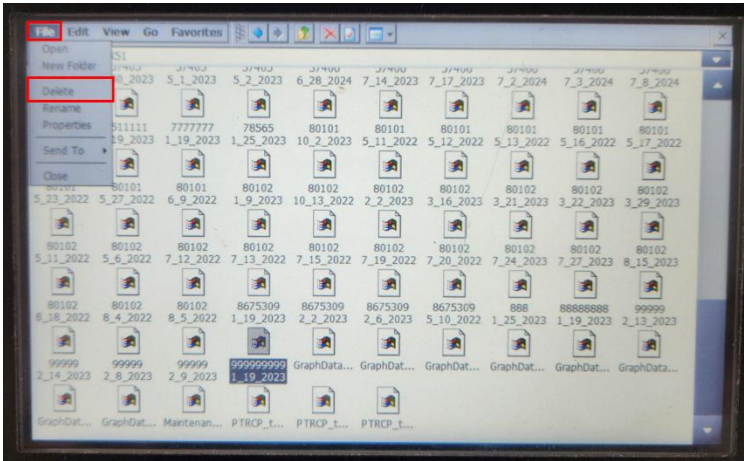


Figure 72. Deleting Files.

Restarting HMI Runtime

To re-launch the BAND-IT HMI Runtime, return to the Windows Embedded Desktop. You will need to close any open windows by tapping the “X” in the top-right corner.

In the “Start Center” window, click the “Start” button.

MAINTENANCE

MAINTENANCE SCHEDULE

The IT80JR tool requires periodic maintenance to prevent malfunction or damage. Refer to the table below for recommended maintenance intervals of critical tool components. Intervals may vary depending on the operating environment.

Table 5

Components	Recommended Service	Recommended Interval	Reference
Backing Wheel	Grease pin	Every 20,000 clamps	LUBRICATION (pg. 56)
Tension Wheel	Clean with wire brush (included w/ tool) McMaster PN:7092T18	Every 20,000 clamps	TENSION WHEEL CLEANING (pg. 57)
	Inspect and replace if worn	50,000 clamps	TENSION WHEEL REPLACEMENT (pg. 60)
Knife	Grease McMaster PN: 1208K22	Every 20,000 clamps	LUBRICATION (pg. 56)
	Inspect and replace if worn	50,000 clamps	KNIFE REPLACEMENT (pg. 58)
Head Assembly	Inspect and replace if worn	100,000 clamps	HEAD REPLACEMENT (pg. 59)

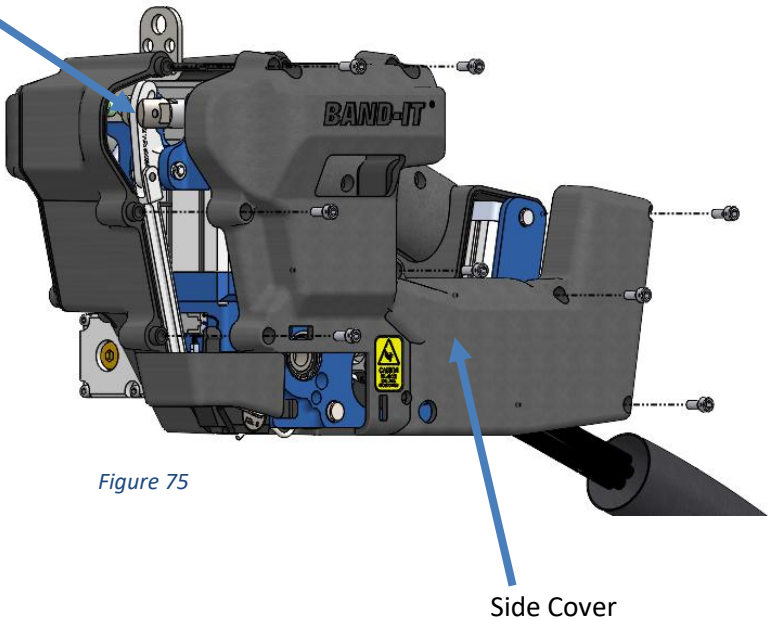
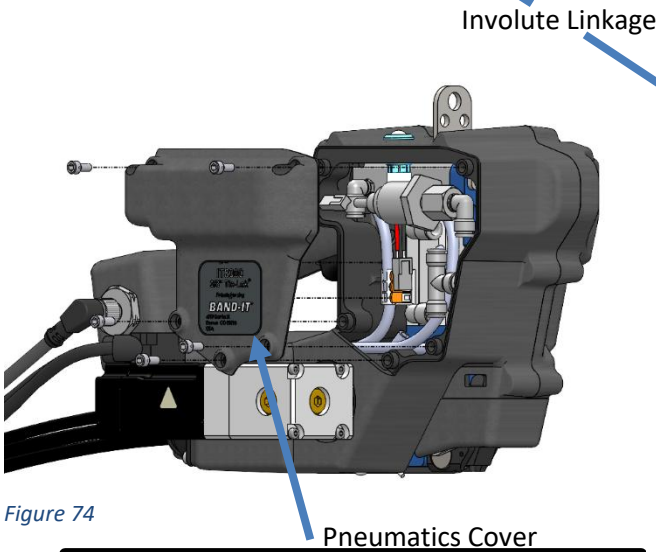
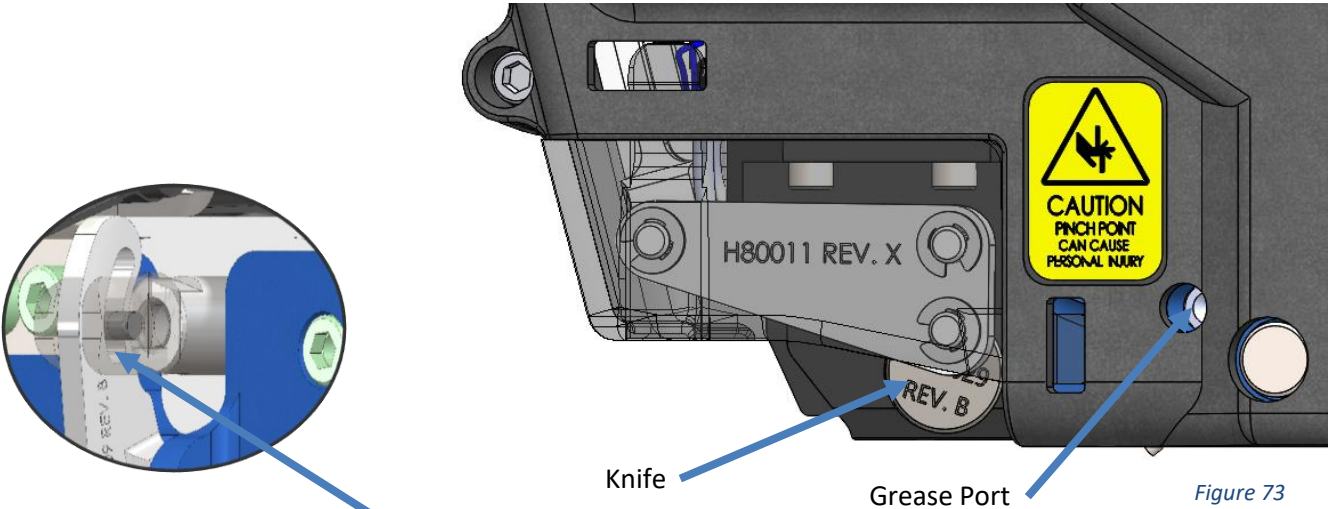
To maximize performance and extend tool life:

- Do not use degreaser on any part of the tool.
- Do not spray any lubricant or cleaner into the pneumatic system.
- Do not remove factory-applied lubrication from inside tool unless performing a thorough maintenance procedure and then replacing with clean lubricant immediately.
- Follow preventative maintenance and parts replacement instructions at appropriate service intervals.
- For maintenance beyond what is described in this manual, contact BAND-IT.

LUBRICATION

Lubricate knife and pin with **Bel-Ray Molylube extreme pressure grease**.

- Lubricate backing wheel pin through the grease port on side of tool. Lincoln 5803 or similar needle type grease fitting is required.
- Lubricating the knife requires partially sliding it out, see [TENSION WHEEL CLEANING](#) for instructions. To increase time between grease, it is recommended to grease inside the curved slot of the involute linkage as well.



Important:

Prior to any maintenance or disassembly, be sure to disconnect all power sources to the tool and discharge pressurized air from the air system.

TENSION WHEEL CLEANING

1. Remove the clevis pin (1) holding the pinch arms (2) and allow it to swing down. Be careful to ensure the backing wheel and pin do not slide out with the pinch arms removed.
2. Enter manual mode to drive the tension wheel for a few revolutions with the wire brush (1/4" brush width) (3) pressed firmly up into the rotating wheel.
3. During reassembly, re-center the tension wheel between the pinch arms and the band guide lined up on the pinch arms to allow for proper re-assembly.

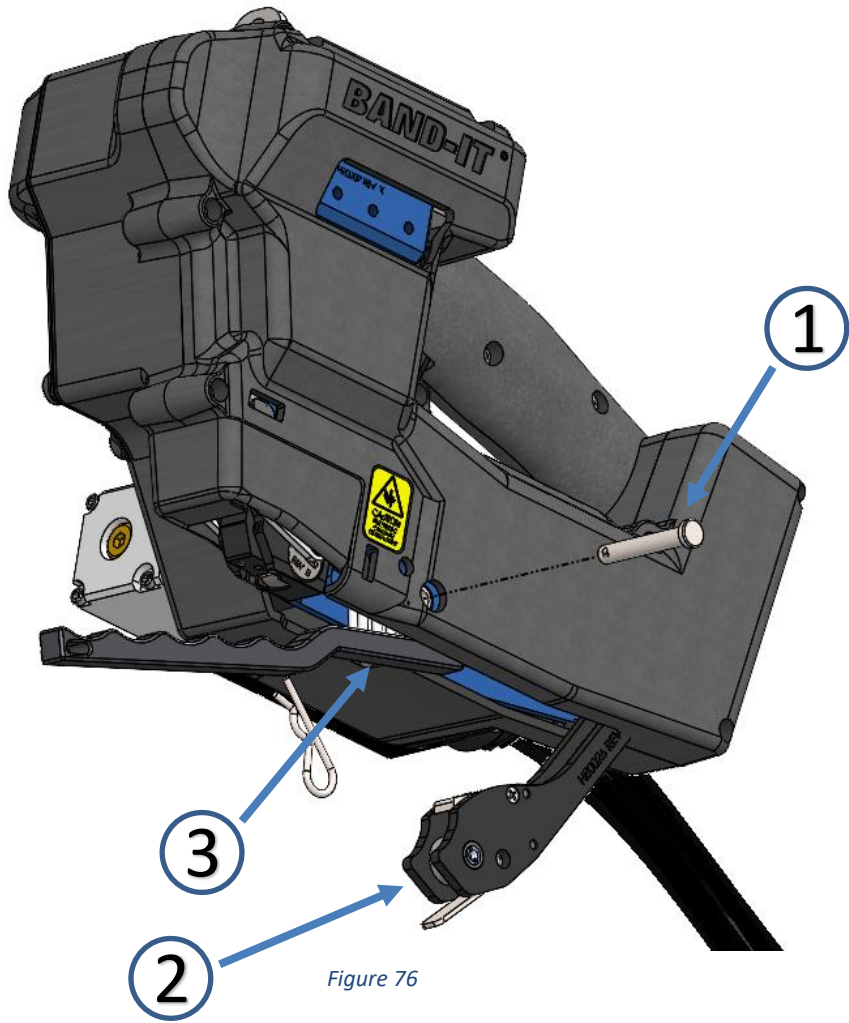


Figure 76

Important:

Prior to any maintenance or disassembly, be sure to disconnect all power sources to the tool and discharge pressurized air from the air system.

KNIFE REPLACEMENT

Remove the Head Cover (1). Pinch the front of cover and rotate down to remove. Remove the E-Clips (2) on the non-motor side only. Push the 2 pins (3) down far enough to allow the linkage (4) to swing out. Remove the knife (5).

Apply a film of grease to the new knife and pins and reassemble, using new E-clips if needed.

Replacement Knife Kit Part Number:

Tool	IT80JR
Part Number	H80935

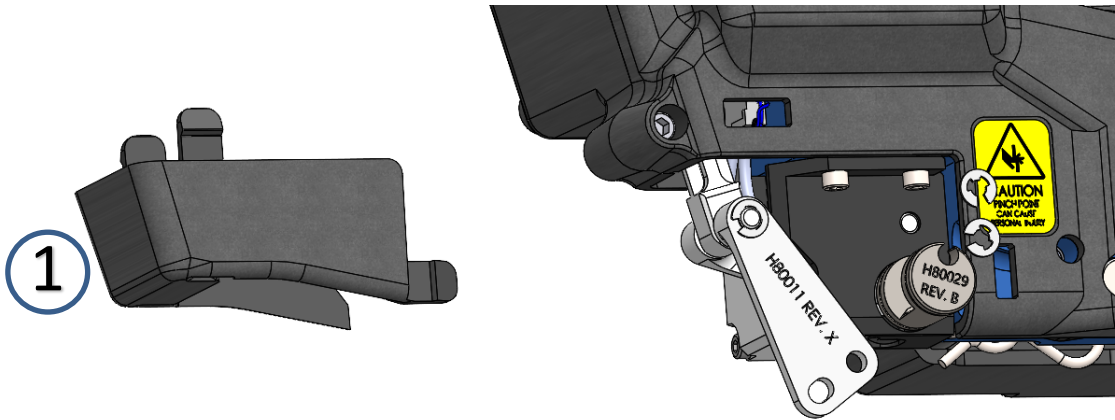


Figure 77

Note: The cutter knife has only one cutting edge. This edge must be properly oriented as shown when installing.

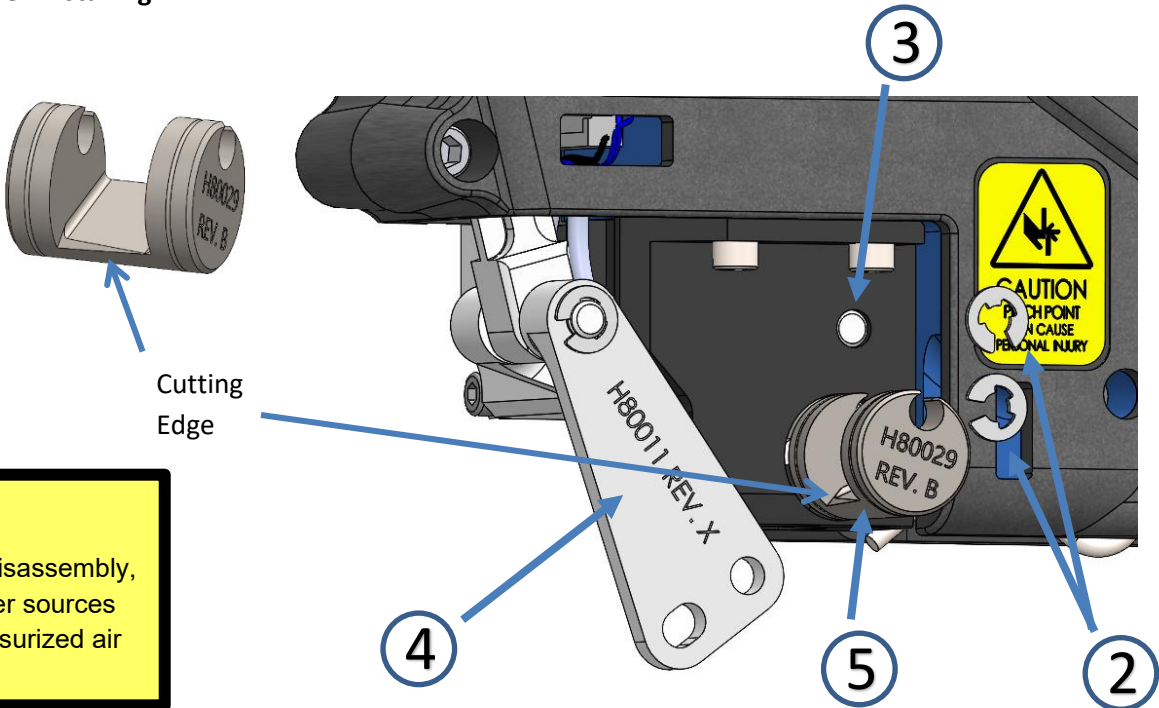


Figure 78

Important:

Prior to any maintenance or disassembly, be sure to disconnect all power sources to the tool and discharge pressurized air from the air system.

HEAD REPLACEMENT

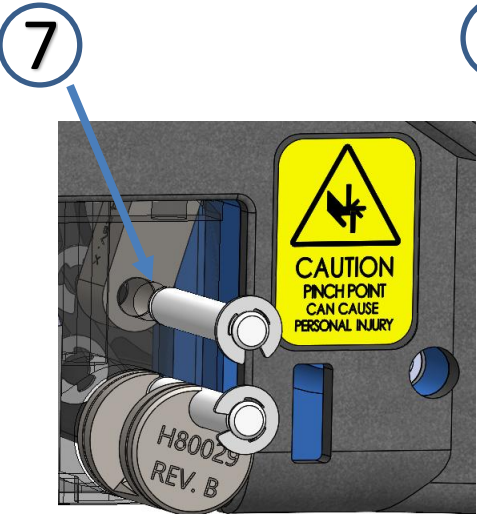
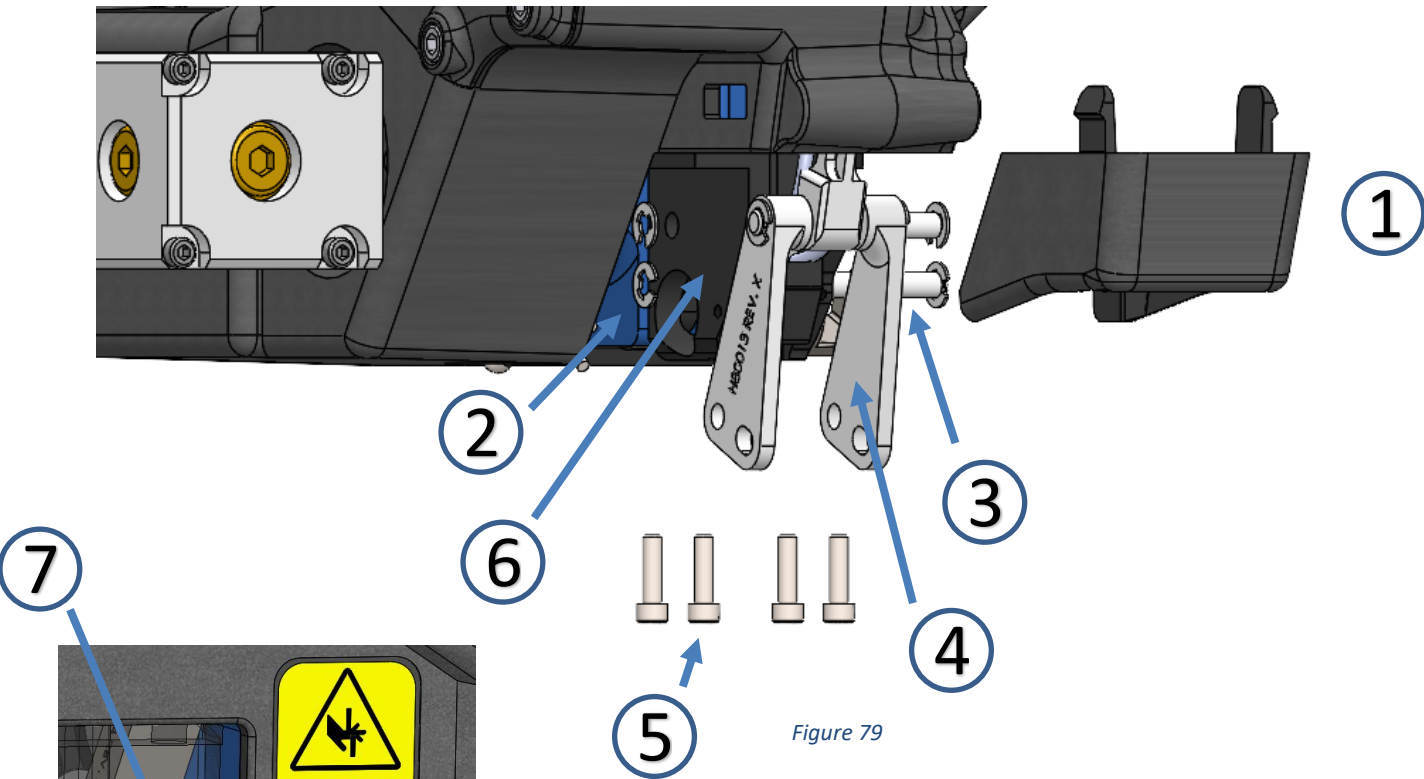
Remove the Head Cover (1). Remove the E-Clips 2x (2) on the motor side only. Pull the pins 2x (3) out of the head. Swing the Linkages (4) down to access the head bolts. Remove the bolts (7/64" hex key) 4x (5). Disconnect the sensor cable and remove the head (6).

Apply a film of grease on the pins and knife and reassemble. Ensure that the upper pin goes through the trigger assembly linkage (7) (Figure 84). Apply Blue Loctite to screws. Only pull-on gray cable jacket when connecting head sensor.

The pneumatics cover or side cover may need to be removed to reconnect the head sensors or to insert the pins.

Replacement Head Kit Part Number:

Tool	IT80JR
Part Number	H80955



Important:

Prior to any maintenance or disassembly, be sure to disconnect all power sources to the tool and discharge pressurized air from the air system.

TENSION WHEEL REPLACEMENT

Remove the Side Cover (1). Remove the screws (9/64 hex key) 8x (2). Remove the clevis pin (3) and drop the pinch arms (4).
Remove retaining ring (5). Remove ball bearing (6). Remove gripper wheel (7). A small pry bar may be required to break the gripper free from the gearbox shaft. This will also break the bearing free from the frame.
Reassemble, apply grease to inner diameter of gripper and align keyed slot of gear box shaft to gripper.

Replacement Tension Kit Part Number:

Tool	IT80JR
Part Number	H80915

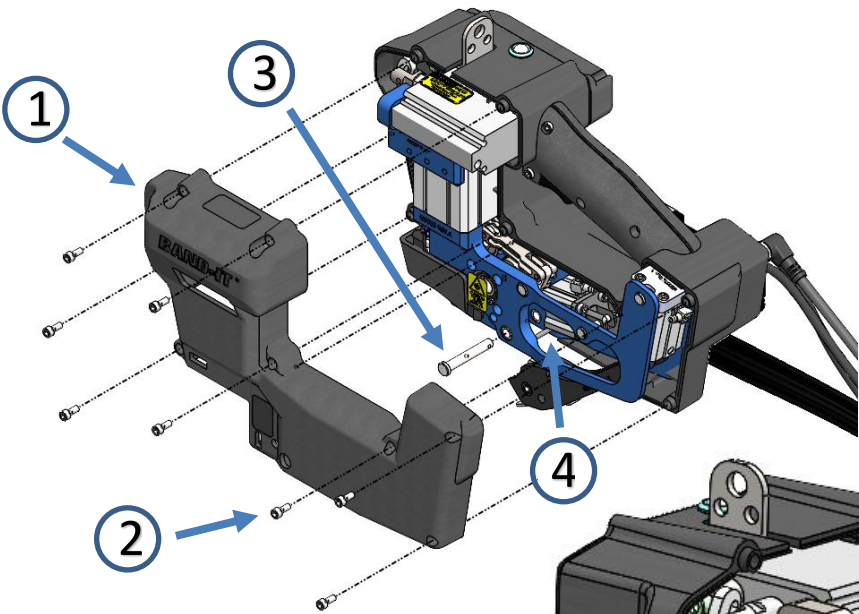


Figure 81

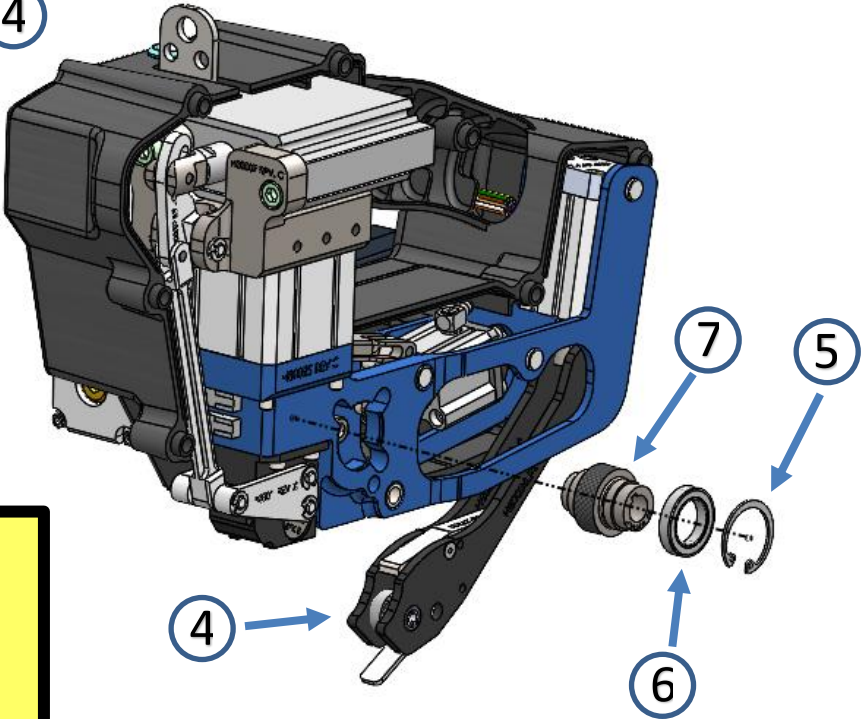


Figure 82

Important:

Prior to any maintenance or disassembly, be sure to disconnect all power sources to the tool and discharge pressurized air from the air system.

TROUBLESHOOTING
TROUBLESHOOTING GUIDE – Table 6

Observed Problem	Possible Cause	Solution
Clamp tail does not insert into tool.	Backing Wheel is touching Tension Wheel.	Verify the return cycle of the clamp cylinder is unimpeded and clamp cylinder is fully retracted.
	Excess material from previous operation did not fully eject.	Clean tension and backing wheels with wire brush.
		Verify the tension wheel rotates enough to remove scrap tail by hand.
Tension wheel does not rotate while tensioning.	Loose motor shaft collar.	Ensure set screw between motor and gearbox is tight. Check for foreign object present or other obstructions.
Pre-set tension is not reached.	Tension Wheel slipping.	Inspect clamp tail for evidence of slipping. Clean Tension and Backing Wheels with wire brush. If slipping persists, replace Tension and/or Backing Wheel.
	Loss of air pressure to Clamp cylinder (<80 PSI).	Verify that air source and fittings are pressurized, unobstructed, and not leaking.
	Drive-train failure.	Contact BAND-IT.
	Clamp tail pinched off at tension wheel due to high pinch force on backing wheel.	Verify air pressure to Clamp Cylinder does not exceed 80 PSI.
	Tension setting too high for clamp/application.	Ensure tension setting (motor torque) is correct for clamp type and application.
	Backing wheel pin un-lubricated.	Lubricate.
Failure to cut clamp tail.	Loss of air pressure to cut-off cylinder (<70 PSI).	Verify that incoming air pressure meets minimum requirements. Check for leaks or obstructions.
	Excessively worn or damaged knife or tool head.	Replace knife or head.

Observed Problem	Possible Cause	Solution
Failure to cut clamp tail (cont.)	Cut-off link jam.	De-energize system for safety. Contact BAND-IT.
	Cut-off Cylinder arm not connected properly.	Verify Cut-off Cylinder arm is connected properly, with pins fully inserted.
	Knife and pins un-lubricated.	Lubricate.
	Loose head mounting screws.	Tighten all mounting screws.
	Cut-off cylinder actuation timing is less than recommended.	Actuate cutoff cylinder for at least recommended timing.
Head sensors not activating	Sensor Damaged	Place metallic object against sensor and verify the sensor activates on the HMI screen.
No power to tool or sub-components	Unplugged power cord / connectors.	Check power cord. Check all connections between components. Be sure to match connector styles, number of pins on individual connections and observe keyed orientation of the connectors. All threaded sleeves on connectors must be fully assembled and secured.
	Power entry plug switch or door latch turned Off	Check switch status.
	Internal Circuit Breaker(s) tripped to Off position.	Check to make sure all Circuit Breakers are in the On position (located inside the Electrical Control box).
Tool does not activate when the trigger is pulled.	E-stop is pressed down	Check switch status
	Manual mode is activated	Tool will not install a clamp in manual mode, turn off to go to normal operation
	External trigger is on.	Turn off external trigger.
Can not reset servo fault error: F-12 Fault on servo drive	Grounding braid of motor cable damaged/disconnected	Replace H80122 motor cable

ERROR CODES

Types of Error Messages:

Warning Messages: These message types are displayed to assist operators with understanding tool behavior and typically resolve themselves. These can be set to persist if the cycle is ended by the operator before they resolve, depending on the "Enable Error Bypass" setting. They do not count toward Failed clamp counts. All warning type errors will begin with a "3".

Error Messages: These do not stop the sequence and the tool can complete an installation when these occur, but they may mean that the tool has not installed the band to the right specifications. Error messages will persist when the "Enable Error Bypass" setting is not checked. These message types will increment the "Error Codes" counter. All error messages begin with a "2".

Critical Alarms: When these errors occur, the tool cannot continue to operate normally, the tool will not complete the installation and the tool will enter the faulted state. Critical alarms will always be displayed independent of the "Enable Error Bypass" setting and require the user to address the issue or reset the error before the tool can continue operation. The first digit of critical alarms begins with a "1".

Troubleshooting: In event of failure, cut all power, depress e-stop button, and contact authorized/appropriate personnel to address the situation.

Table 7 – Error Code Summary Table:

Number	Description	Details
135	Band Slipping Detected	This error occurs when large changes in motor velocity are detected, and the number of detections exceeds the amount of allowable slipping events defined on the HMI. When this error is triggered, the tool will fault, the LED will blink red, and the sequence will end. Possible Cause: See “Pre-set tension is not reached” troubleshooting section.
144	Tool Line Up Timeout	This error occurs when the time limit set by the “Line Up Tool Timeout” setting on the HMI is exceeded before the contact switches are triggered. When this error is triggered, the tool will fault, the LED will blink red, and the sequence will end. Possible Cause: Buckle/proximity sensors are not functioning correctly.
155	General Servo Fault Detected	This error occurs when the servo and/or the drive are in a faulted state. When this error is triggered, the tool will fault, the LED will blink red, and the sequence will end. Possible Cause: Obstruction in drivetrain.
213	Parameters Not Passed – Torque Out of Tolerance	This error will occur after a completed cycle if the measured motor torque is outside of the allowed range set on the HMI for the set monitoring period. The torque is monitored from the point where it reaches the torque tolerance band and through tightening until after the cut operation. Possible Cause: Tolerance settings too tight, worn motor/gearbox.
224	Parameters Not Passed – Contact Switch Lost Contact	This error will occur after a completed cycle if the contact switches lose contact during the monitoring period. The contact switches are monitored from the time they are first lined up to just after the cut. Possible Cause: Operator movement during installation process
311	Supply Pressure Out of Range	This message will display when the trigger is pressed, and the supply pressure is outside of the range defined on the HMI. Possible Cause: Regulator set incorrectly
313	Torque Out of Tolerance Before Cut	This message will display if the tool has completed the cut operation and motor torque has left the set torque tolerance before the tool completes the band cutting operation. The message will persist until the tool adjusts tension back to within tolerance, at which point it will automatically clear. Possible Cause: See “Pre-set tension is not reached” troubleshooting section.