Operator's Manual

POP® Riveting System

Point & Set

Manual in English

Emhart® POPMATIC

A BLACK&DECKER COMPANY

For Telephone Support Call: **1-203-924-9341**

Emhart POP
A Black & Decker Company
Fastening Systems Division
50 Shelton Technology Center, Shelton, CT 06484, USA

P/N PSA081000D01X – Rev. A

Introduction

Welcome to the next generation of fastening technology. Emhart POP is proud to introduce the finest, high-volume, riveting system available anywhere in the world.

This new Point & Set system has a bulk feeder capacity of nearly 2,000 rivets. To date, this is the most productive and easiest to use fastening system the industry has ever seen.

The low system cost is just one advantage it has to offer over other fastening systems. The tool is lightweight, portable, and can be operated on the shop floor or at a bench with the vertical tool option. Break stem blind rivets offer greater shear, tensile, clamp-up and pullout strength than most other fastening techniques.

The advantages over spot welding are numerous. The fastening of dissimilar, coated or pre-painted materials pose no problem for the Point & Set system. And the system is safer for the operator and the environment.

Table of Contents

Safety Considerations and Hazards

PLEASE take the time to read and understand the following safety considerations before setting up, using, and servicing the Point & Set system. In this manual it is assumed that all service contained will be performed by a qualified technician with expertise in hydraulic, pneumatic, mechanical, and electrical systems. There are no user-serviceable parts beyond the descriptions in this manual. If you have any comments, questions or concerns about this product, please contact us at **1-203-924-9341**.

Always wear eye protection when operating the tool.

Do not point the tool at anyone.

Disconnect system from the air supply when not in use for an extended period of time or when performing maintenance procedures. Only qualified and trained technicians should attempt service.

Use caution when connecting and disconnecting air hoses, whipping air hoses may cause personal injury.

Do not attempt to operate the system while disassembled or with covers removed unless otherwise specifically instructed to do so. These cases are covered in the troubleshooting section of this manual.

Do not operate the tool without hose connections or without the Mandrel Collection Bin in place.

Do not operate the system if damaged. Inspect the system regularly for damaged or worn parts.

Operate the system only in a dry environment. Do not connect to electrical power or operate while standing on a damp surface.

Do not operate the system outdoors.

Before relocating the system be sure that both air and electrical utilities are disconnected, the operator interface is stored on the unit, and the casters are unlocked.

Operate the system on a level surface and set the caster locks to prevent the main enclosure from rolling.

Do not use the top surface of the main enclosure for storage of rivets or other objects.

Keep hair, fingers and loose clothing from contacting the rivet loading mechanism. Pinching may cause personal injury.

Remove front cover before lifting the main enclosure.

Do not attempt to move the system by pulling on the tool umbilical hose. The umbilical hose contains high-pressure air and hydraulic lines which if ruptured or disconnected could cause personal injury.

This symbol is intended to alert the user to the presence of important safety, operating, or maintenance instructions in this manual.

This symbol is intended to alert the user to the presence of potentially “dangerous voltage” within the system’s enclosure that may be of significant magnitude to constitute a risk of electric shock to persons.

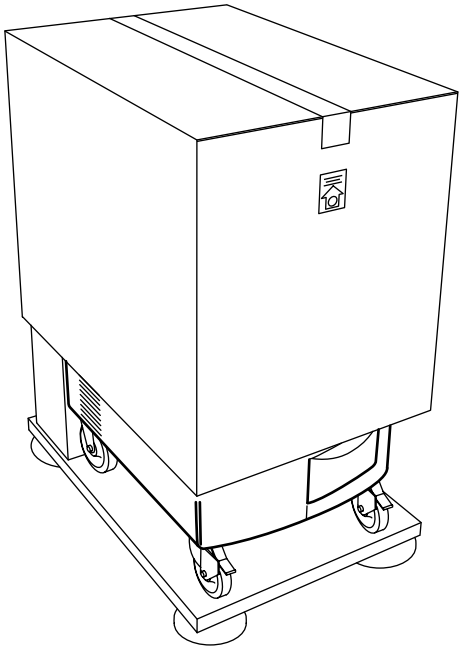
Use only genuine POP brand replacement parts when servicing this product.

Unpacking and Parts List

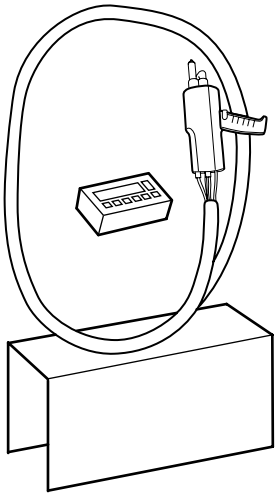
Prior to opening the shipping container, inspect the tilt indicator. This may reveal rough handling during shipment. Any shipping damage issues should be directed to the carrier.

The following items should be present in the container:

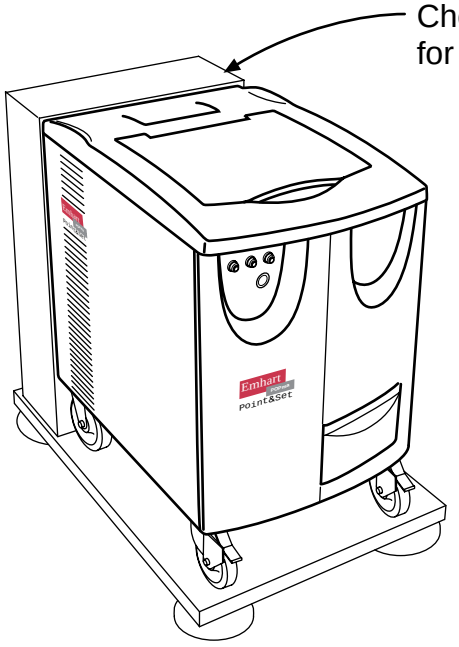
- Main Enclosure
- Tool Assembly
- Utility Supply Assembly
- Documentation
- Operator Interface
- RDD Adjustment Tool

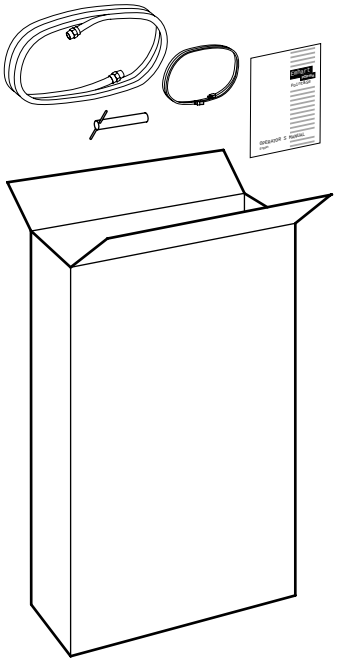


After checking the shipping container for damage, remove the straps and lift the box off the pallet.



Check the accessory box for all of the items shown.





Unpacking and Assembly

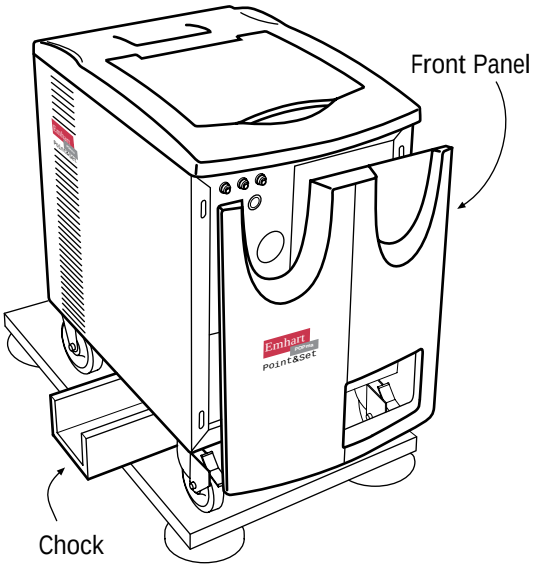
REMOVE PANEL AND MCS BIN

1) Remove the front cover by grasping the bottom and pulling just enough to disconnect the ball-studs.

2) Pull at the top corners to remove.

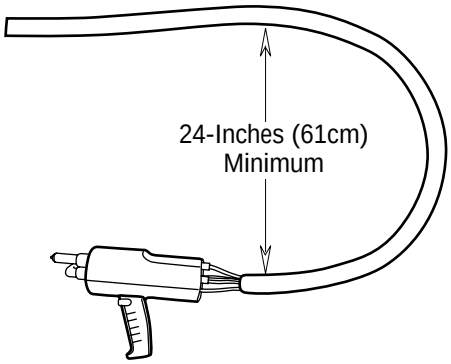
3) Remove the two (2) bolts fastening the chock to the pallet. Slide the chock from under the unit.

4) Carefully roll the unit off the pallet. Support some of the weight to avoid shock damage.



UNPACK UMBILICAL & TOOL ASSEMBLY

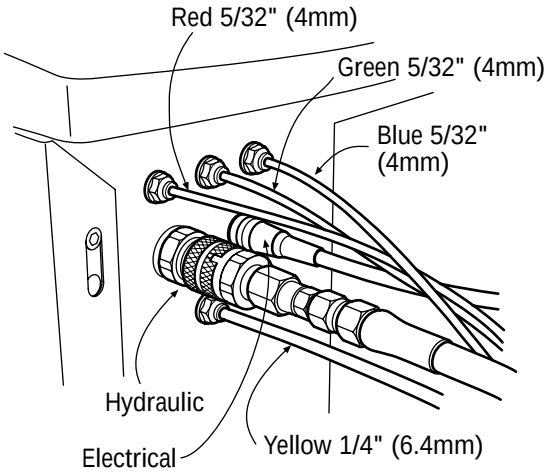
WARNING:
The umbilical should never be wound tighter, or have a bend less than 24-inches (61cm). This could damage the umbilical or prevent proper rivet and mandrel delivery to and from the tool.



CONNECT THE UMBILICAL

1) Connect the Hydraulic “Quick-Connect” by pushing straight into its mating connector. Mis-align tab & notch to prevent accidental release. Tug on each connection to ensure each is properly mated.

2) Make the electrical connection by aligning and inserting the plug into the socket. Lock the connection by turning the threaded outside sleeve clockwise.



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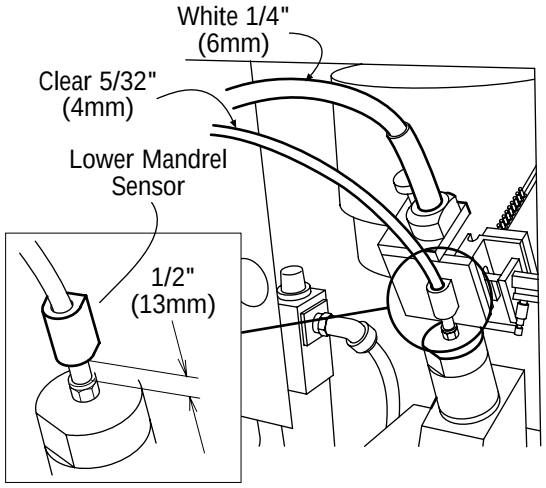
Assembly

CONNECTING THE UMBILICAL *continued*

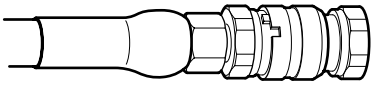
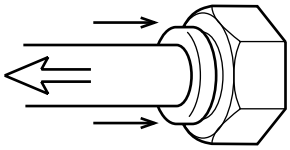
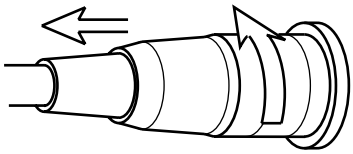
3) Push the color-coded tubing straight into their respective connector as shown.

4) Insert the MCS tube through the Lower Mandrel Sensor and secure the tube in the MCS bin connector.

5) Fit the feed tube assembly over the escapement pins. Swing bolt forward and firmly tighten thumbnut. Make sure the plate is fully seated.



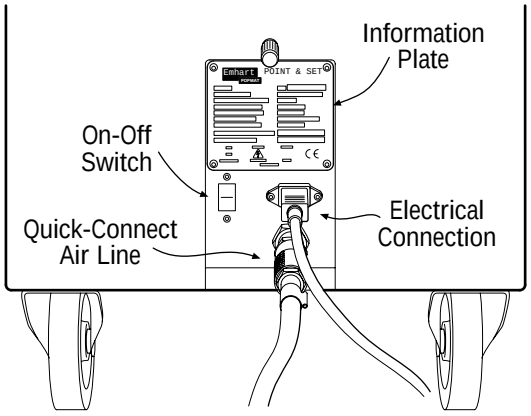
RELEASING THE CONNECTIONS

Hydraulic (oil)	Pneumatic (air)	Electrical (electrons)
		
Align Tab & Notch and pull.	Push collar in & pull tubing.	Unscrew collar and pull.

CONNECT SHOP AIR AND POWER

6) Connect the Point & Set unit to a clean and dry air supply. The minimum requirement is 90 psi (6.2 bar) at 12 scfm (340 l/m).

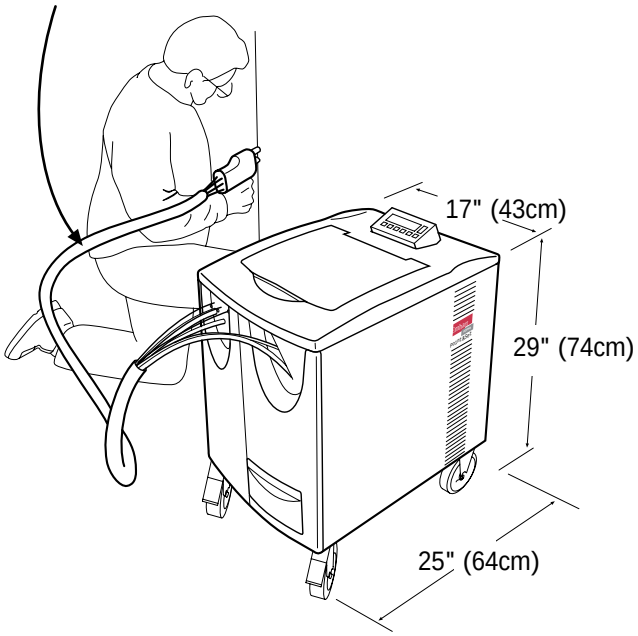
7) Make the electrical connection to a convenient and appropriate l.T. type supply.
110-120 VAC (domestic) 220-240 VAC (export)



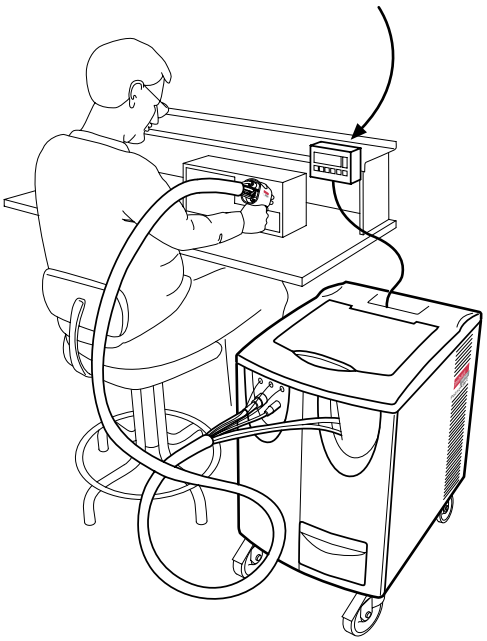
Assembly

SIZE & SPACE REQUIREMENTS

The umbilical allows tool operation up to 12 feet in length depending upon rivet type and material.

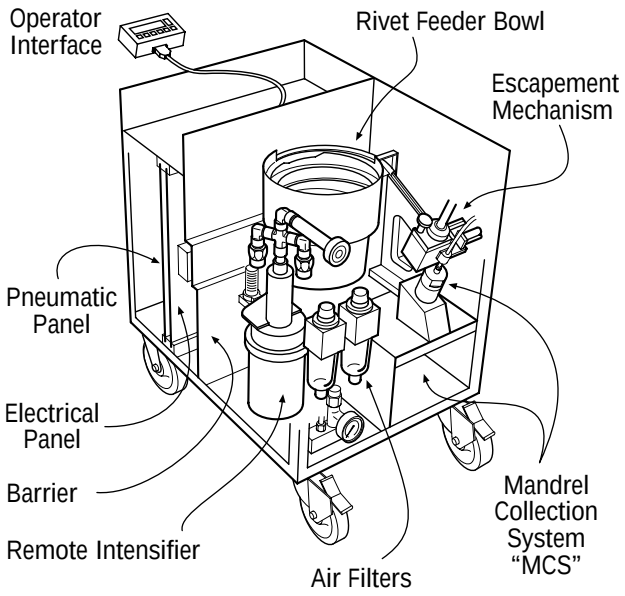


The Operator Interface can be extended as far as 8 feet (2.4m) from the main enclosure and will adhere to metallic surfaces via a magnet.

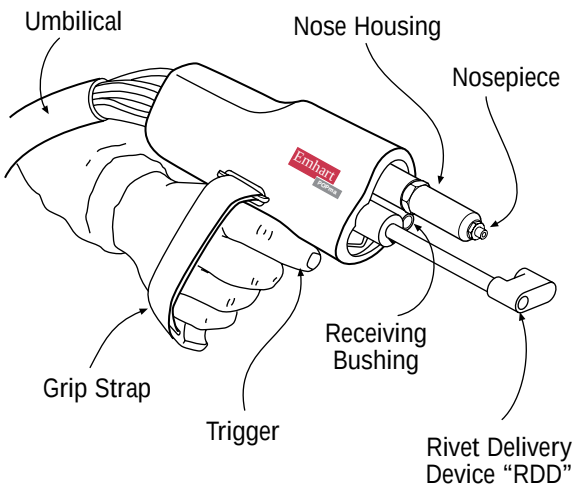


Component Overview

THE MAIN ENCLOSURE



THE RIVET SETTING TOOL



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Theory of Operation

In this section, we will take a look at the events that take place when the trigger is pulled and a rivet is set.

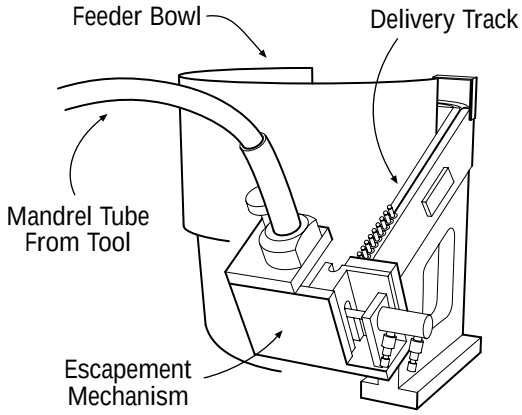
At each stage, we will describe the function of each module that make up the POP Point & Set.

FEEDER BOWL & ESCAPEMENT

1) Rivets are loaded into the feeder bowl.

2) Rivets are delivered from the bowl and fed down the track. A sensor triggers the feeder bowl to maintain proper track fill level.

3) The Escapement Mechanism feeds each rivet into the umbilical tube airstream.

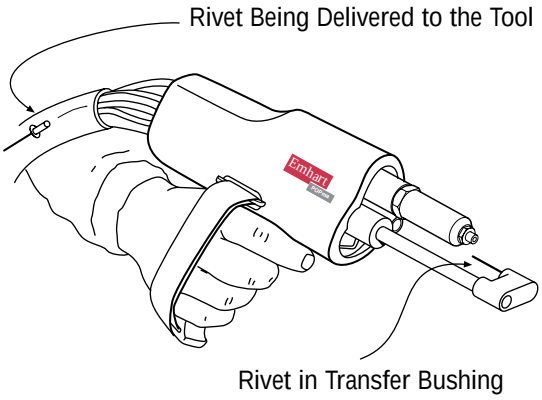


TOOL & UMBILICAL

4) The rivet is delivered to the tool through the umbilical.

5) The Rivet Delivery Device (RDD) receives the rivet from the umbilical and transfers it to the tool nose.

The operation of the RDD can cause injury. Keep loose clothing, hair, and all body parts clear of this mechanism.

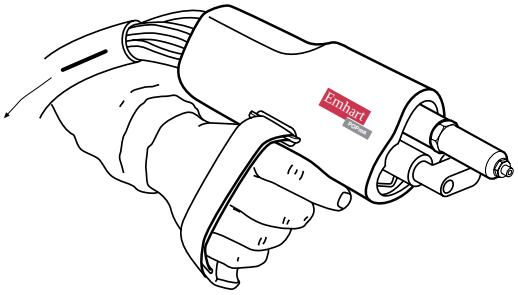


RIVET SET & MANDREL COLLECTION

6) The Rivet is inserted into the materials to be joined and set with the squeeze of the trigger.

7) The mandrel is transported through the umbilical back to the main enclosure and the Mandrel Collection System (MCS).

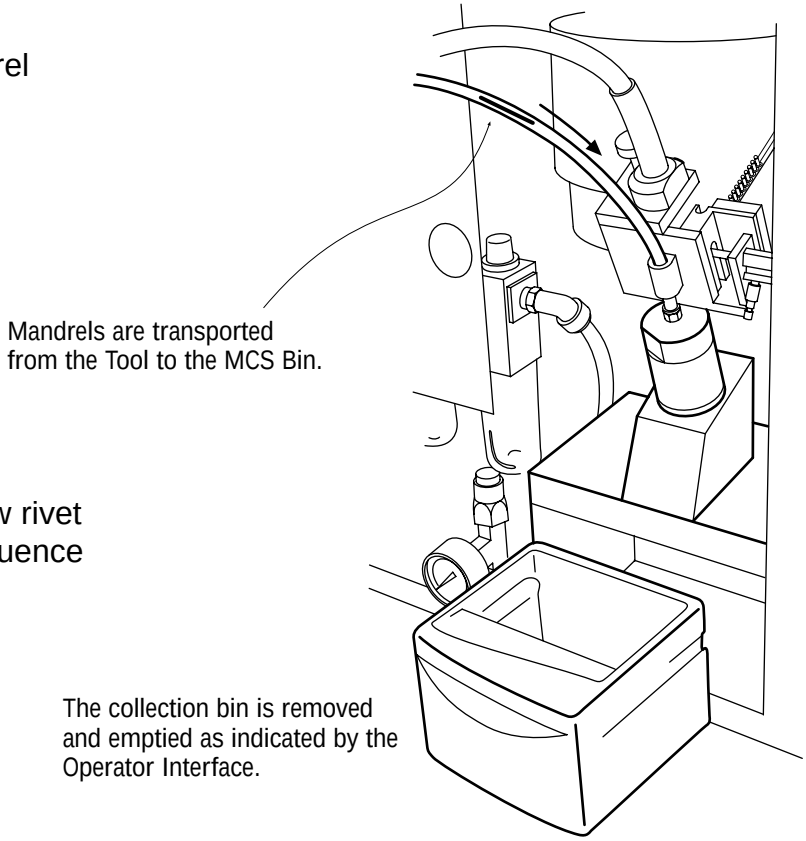
Do not release trigger until the tool has been retracted from the work.



Theory of Operation

MANDREL COLLECTION & DISPOSAL

8) The mandrel is drawn to the Mandrel Collection System, or “MCS”.

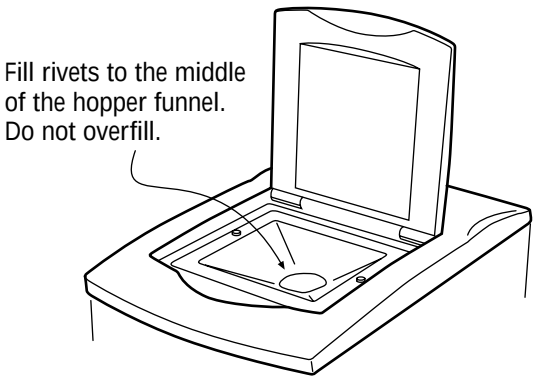


9) When the trigger is released, a new rivet is delivered to the tool and the sequence begins again.

System Start-Up and Operation

LOAD RIVETS

The POP Point & Set requires the use of high quality rivets. Consult the Emhart-POP Help Line, **1-203-924-9341**, to determine the compatibility of other types of rivets.



System Start-Up and Operation

TURN SYSTEM ON

Turn the system on only after it is fully assembled, all connections are made, with the wheels locked in place.

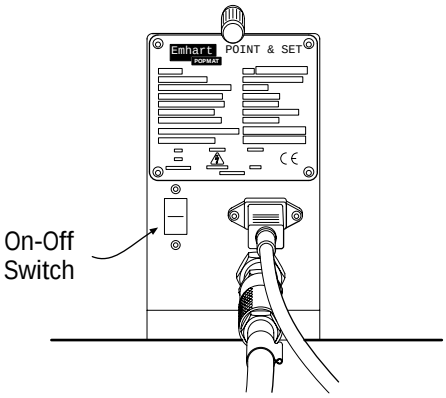
Refer to pages 6 and 7 of this manual.

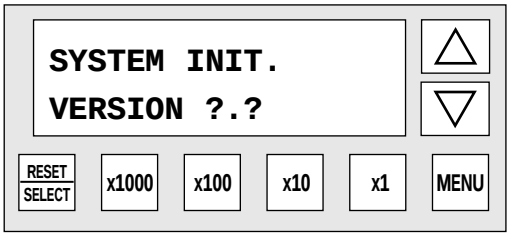
When the Point & Set is turned on, it takes a moment to check each of the different systems during system initialization. The system software version is displayed on the Operator Interface at this time.

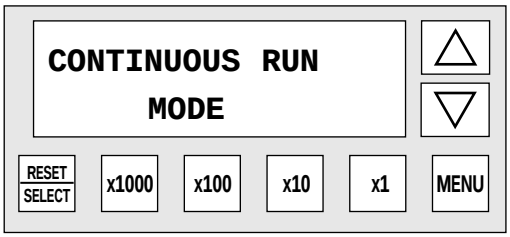
When the system has finished initializing, it is placed in *Continuous Run Mode* or in the mode last used.

If a problem is detected, the Operator Interface will identify the fault area.

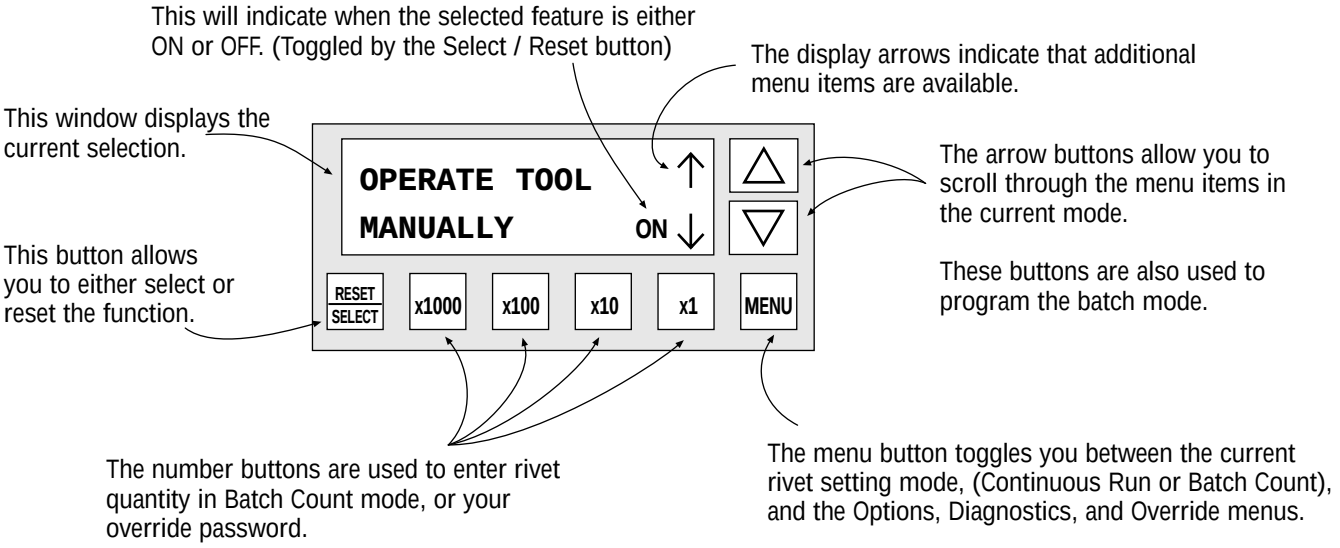
Refer to the “Troubleshooting” section of this manual to address system problems.







OPERATOR INTERFACE – OVERVIEW



System Start-Up and Operation

OPERATOR INTERFACE MENU

The following table shows an overview of all the sub menu items associated with each of the four main menu modes.

Run Modes MENU	Options Menu MENU	Diagnostics Menu MENU	Override Menu*
↑↓ Batch Count	↑↓ Beep For:	↑↓ Track Level Sensor	↑↓ Front Cover Interlock
Continuous Run	Fault	RDD Home	Escapement Shuttle
(Total Count)	Batch Complete	Mandrel Sensor	Tool Air Assist
(Shift Count)	MCS Full	Vacuum Switch	Transport Rivet
Manual Override	Remote Reset	Trigger Test	Extend RDD
	Low Bowl Level	Remote Reset Switch	Retract RDD
	Main Air Time-out	Low Air Press Switch	Transfer Rivet
	Rivet Size Select		Activate Tool
	Reset Lockout		Feeder Bowl
	Riveting Position Select		Beeper
	Tool Charge		

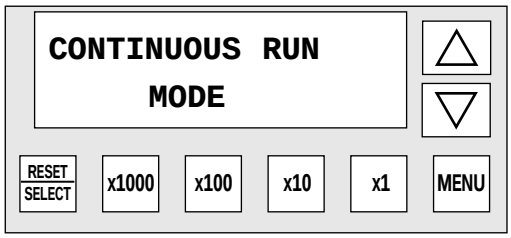
** You will not be able to access the Override Mode without a password and proper training.*

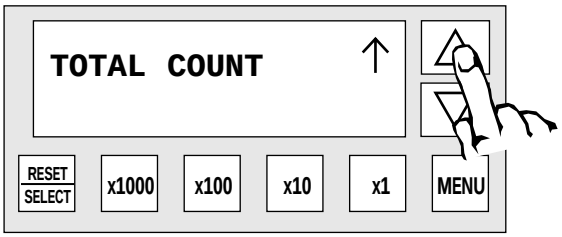
CONTINUOUS RUN MODE

When the Point & Set is turned on for the first time, the operator interface will come up in Continuous Run mode.

This mode enables you to begin setting rivets right away. Simply pull the trigger and the tool automatically sets and reloads the rivets.

From this mode we can also access and reset the *Shift Count* and display the *Total Count.* This is done by pressing the Up Arrow button.



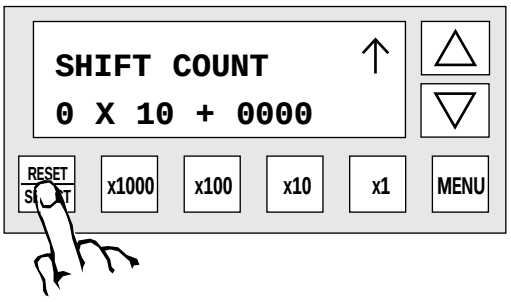


SHIFT AND TOTAL COUNT

The Shift Count displays the number of rivets that have been set during any one work period.

This can be Reset to zero by holding the *Reset / Select* button for 5 seconds.

Note: The max total for Shift Count is 32,676.



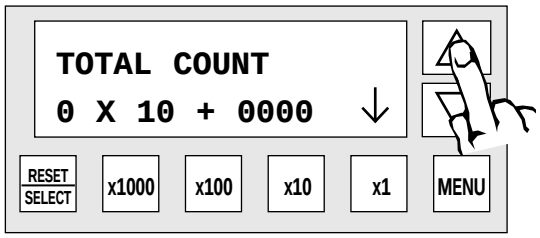
System Start-Up and Operation

SHIFT AND TOTAL COUNT *continued*

The Total Count displays the total number of rivets that have been set by this machine. This number cannot be reset.

Change between these screens by pressing the Arrow buttons.

Pressing the *Menu* button will toggle back to *Continuous Run Mode.*



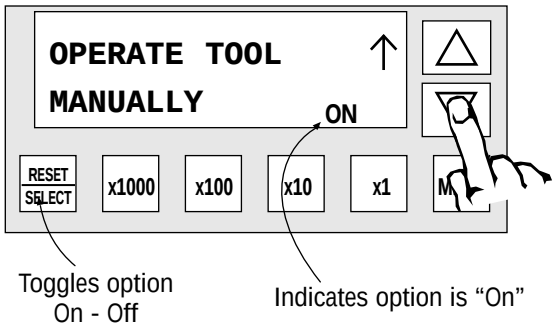
MANUAL RUN MODE

In the unlikely event the auto feed system becomes disabled, the *"Operate Tool Manually"* option allows manual operation and rivets can be loaded individually by hand. Batch Mode remains operational.

To activate from the Continuous Run screen, press the down arrow.

Remember to turn this option *OFF* when finished or auto feed will remain disabled.

<u>*NOTE:*</u> The display will indicate "Tool in Manual Mode" whenever this is selected and the trigger is pulled.



BATCH COUNT MODE PROGRAMMING

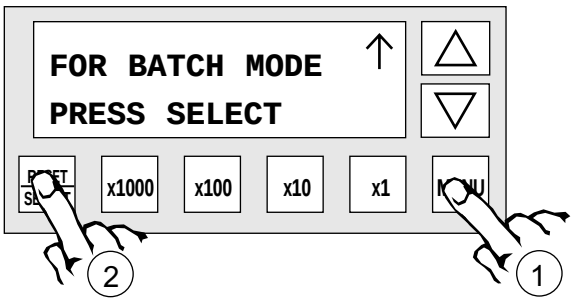
Batch Count Mode lets you program a specific number of rivets for a given job. When the target number of rivets have been set, the system indicates that the batch is complete with a "beep" (optional).

To access from the Continuous Run Mode, press Menu, then the Reset/Select.

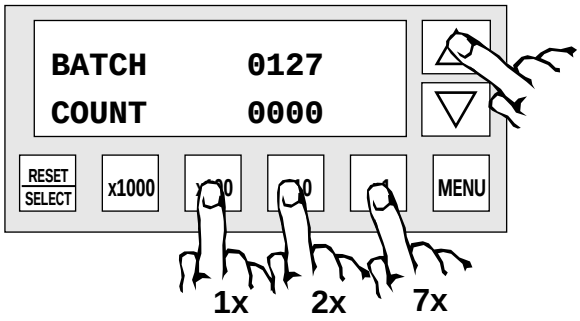
The tool is disabled until the reset button is pressed.

To enter Batch Mode

1) Press the *MENU* button.
2) then the *SELECT* button.



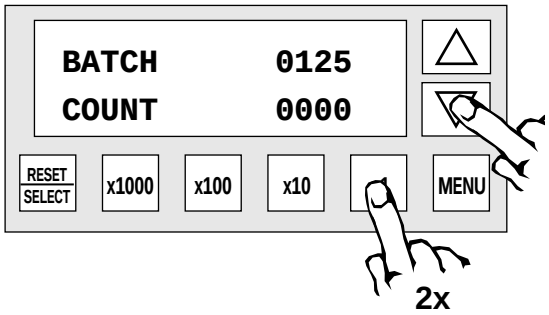
BATCH COUNT MODE *continued*



To Increase the Quantity
(Target: 127)

1) Hold the Up Arrow button.

2) Press the numbered buttons in the following manner.
x100 :1 time
x10 :2 times
x1 :7 times



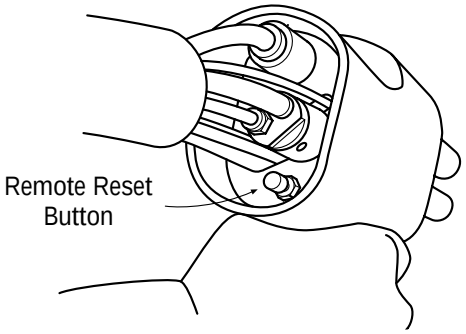
To Decrease the Quantity
(Target: 125)

1) Hold the Down Arrow button.

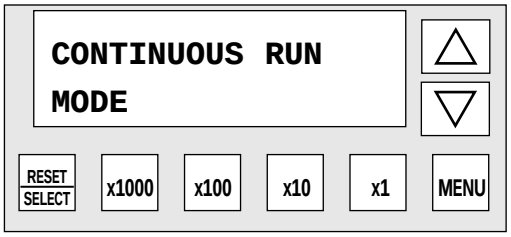
2) Press the appropriate numbered buttons to reduce the quantity.

As rivets are set, the count increases. When the programmed number is reached, a beep (optional) will be heard and the display will indicate “Batch Complete”. The system will not function until the batch is reset or placed in a different run mode.

The batch can be reset by pressing the Reset / Select button on the operator interface or the *remote reset* button on the tool.



CONTINUOUS RUN MODE



Continuous Run Mode allows you to operate the tool without the feature of counting the rivets as in batch mode. Rivets may be set as long as the supply is adequate in the feeder bowl.

Operator Interface: Options

In the *Options Mode* we are able to either enable or disable the “beeps” that alert us to a problem or a condition that requires our attention. This mode also allows us to set the Main Air Time-out, set Rivet Size, and enable the Reset Lockout.

BEEP SIGNAL DESCRIPTION

1 Beep FAULT ALARM.
The operator interface will display the area of the fault. Consult the Troubleshooting section of this manual for specific actions to take.

2 Beeps RESPOND.
This alerts you to the following conditions:

Batch Complete
Low Bowl Level
Remote Reset Accepted

3 Beeps MCS FULL.
The MCS drawer holds as many as 5,500 (size 4) rivet mandrels. At some point you will need to empty the drawer. Be sure the drawer is properly reinstalled when finished.

Solid Continuous Beep PLC BATTERY IS LOW.
This alert reminds the operator that the memory retention battery on the controlling P.L.C. needs to be changed. Once the battery is low, the system will start a series of ten long beeps and warn the operator via the keypad of the low battery. By the tenth warning, if the battery has not been replaced, the operator must clear the fault at the keypad and replace the battery.

NOTE: If the MCS drawer is not fully inserted, a fault message “MCS Drawer Open” will occur when the trigger is pressed.

 Remember to *EMPTY the* MCS drawer *EVERY TIME* it is removed from the console.

MAIN AIR TIME-OUT

If the Point & Set stem stands idle for a set period of time, the system will automatically shut the main air supply off. In this mode the time-out period can be set to 1, 3, or 5 minutes. This time-out is factory set at 3 minutes. The air pressure is restored when the trigger is pulled.

RIVET SIZE SELECT

Set the required rivet size in this mode. Pressing the up & down arrows will scroll through the rivet sizes available. After setting the rivet size, other adjustments may be necessary. Refer to the Adjustments section of this manual.

Operator Interface: Options

RESET LOCKOUT

The Reset Lockout option disables the ability to reset the tool after a fault has occurred without first entering a code number. This is intended to keep an operator from indiscriminately resetting the system without attending to a fault. The code should only be given to qualified personnel. The tool resets normally, without the code, when this option is not chosen.

Your Reset Lockout Code is: _____

RIVETING POSITION SELECT

Set for predominant riveting position in this mode. Pressing the up and down arrows will toggle between “Vertical Riveting” and “Horizontal Riveting”. Each selection optimizes the system for the selected operation.

CONTINUOUS RUN MODE LOCKOUT

When enabled, this Lockout Feature only allows Run Mode to occur within the Batch Mode. To enable this feature, enter in your code and press “Reset/Select”, then press “Menu” and begin your batch count. To disable this feature and return to Continuous Run Mode, re-enter the lockout code under the “Continuous Run Mode Lockout” screen, press “Reset/Select” to enter the Run Mode Selection Screen, then press “Reset/Select” again.

Your Continuous Run Mode Lockout Code is: _____

TOOL CHARGE

When enabled, this feature allows for 10 psi of air to be sent to the Remote Intensifier for charging of the Tool Umbilical. (This option is only available on units with B-Series Remote Intensifiers, see Service Manual for details.)

Operator Interface: Diagnostics Mode

The Diagnostics Mode enables you to test each of the key switches and sensors throughout the Point & Set system. Keep in mind that no more than 2 diagnostic modes should be active at the same time and remember to disable the diagnostic modes when finished with these procedures.

TRACK LEVEL SENSOR

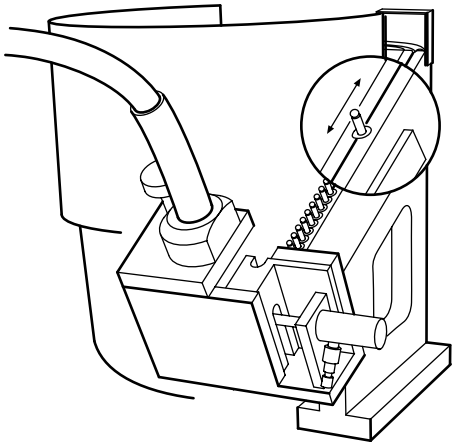
The Track Level Sensor monitors the fill level of the track and controls the operation of the vibratory bowl.

1) Enter the “Monitor Track Sensor” portion of the Diagnostics Mode.

2) Remove a majority of the rivets to expose the sensor window.

3) Hold one rivet, pass it up & down in front of the sensor window.

Each time it passes the sensor you should hear a tone. If not, check the connections. If the problem persists, you may need to replace the sensor.

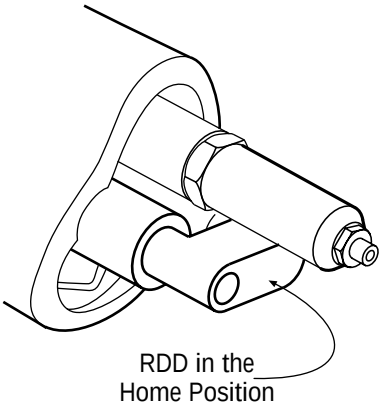


ARM SENSOR

The Arm Sensor confirms that the Rivet Delivery Device, (RDD), is in the fully retracted position prior to allowing the system to transport the next rivet.

While in this diagnostic mode, if a tone is not audible when the RDD is retracted, the *RDD Home Sensor* position may need adjustment or replacement.

Refer to page 19 for the sensor adjustment procedure.



MANDREL SENSOR

The Mandrel Sensor confirms that a mandrel has been collected in the drawer.

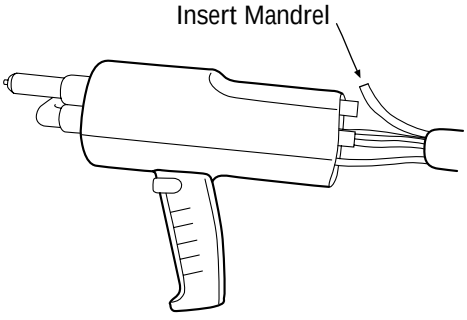
To test the Mandrel Sensor:

1) The air must be ON.

2) Pull back the umbilical sheath from the tool.

3) Disconnect the mandrel tube from the tool.

4) Insert a mandrel in the tube at the tool.

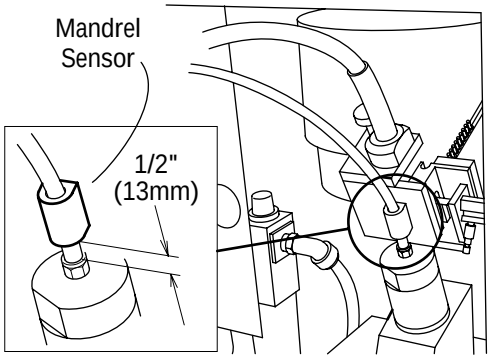


Operator Interface: Diagnostics Mode

MANDREL SENSOR *continued*

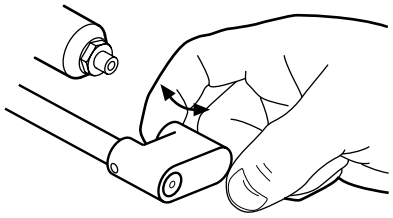
A tone should be heard as the mandrel passes through the sensor. If this is not the case, you may have a jam in the tube. Refer to page 22 for instructions on how to clear this jam.

If you are certain that the tube is clear, and you do not hear a beep, you may need to adjust or replace the sensor.



VACUUM SWITCH

Extend the RDD Arm and “tap” the Transfer Bushing. A beep should be heard in response. If not, refer to the service manual for the adjustment procedure.

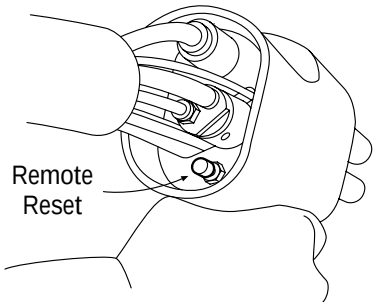


TOOL TRIGGER

Select and activate “Tool Trigger” mode. Squeeze the trigger and confirm a solid beep each time the trigger is activated. If no beep is heard, the trigger may be binding or the switch may need to be replaced.

REMOTE RESET

To test the remote reset switch simply press the button while in this diagnostic mode. If a tone is audible, the switch is OK. If not, you may need to replace the switch.

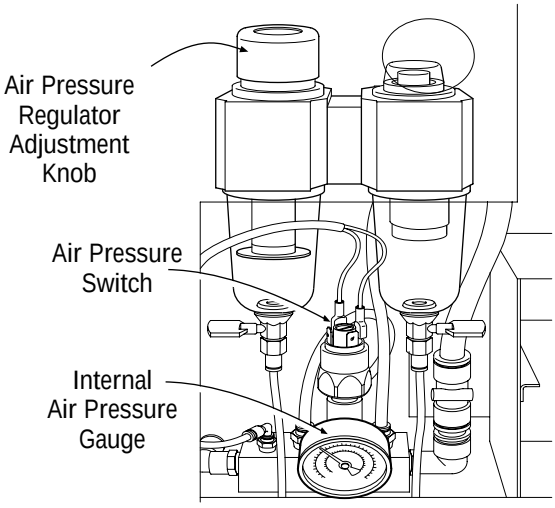


AIR PRESSURE SWITCH

To test the Air Pressure Switch in this Diagnostic mode, reduce the internal air pressure slowly at the regulator. You will need the regulator knob found in the oil fill kit.

A beep should be heard when the internal air pressure gauge falls between 50-52 psi. (3.43.6 bar)

Refer to the service manual for the switch adjustment procedure.



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Operator Interface: Override Mode

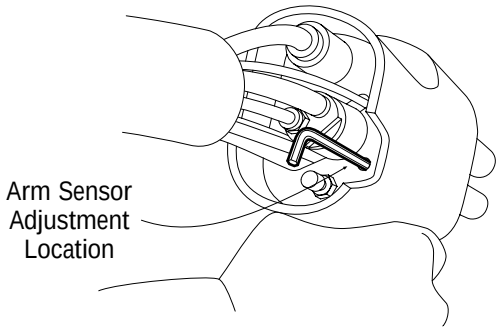
OVERRIDE MODE

These override lockouts are accessible only to properly trained personnel. Refer to the service manual for detailed instructions.

Adjustments

ARM SENSOR

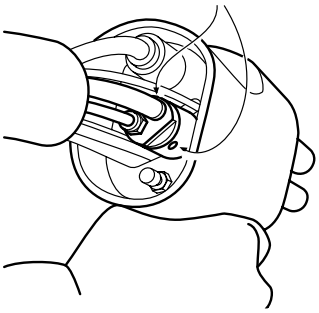
To adjust the sensor, manually extend the RDD arm and confirm solid beeps as the arm approaches the rear most position. Using an Allen wrench, adjust the sensor as necessary to achieve solid beeps between .125'' and .063'' (3.17 to 1.6mm).



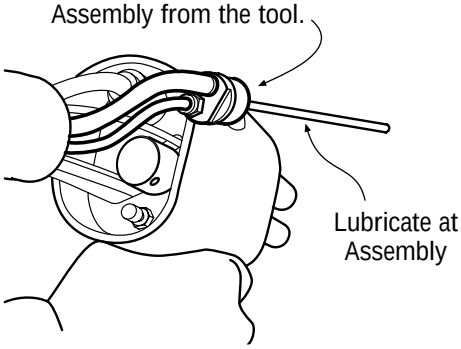
RIVET DELIVERY DEVICE (RDD)

Mandrel Length Adjustment

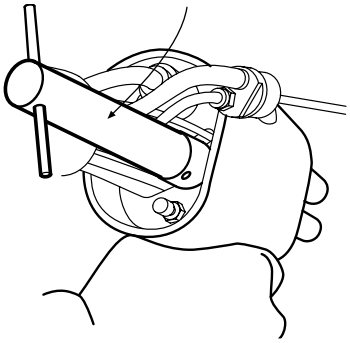
1) Remove the two screws. Be careful not to lose them.



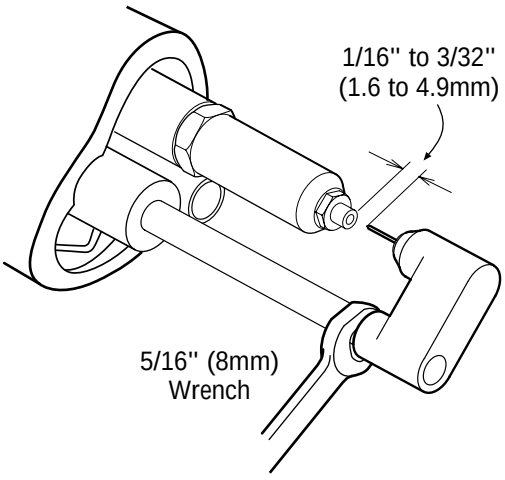
2) Carefully pull the RDD End Cap Assembly from the tool.



3) Insert the RDD Adjustment Tool.



4) Hold the RDD Arm with a 5/16'' (8mm) Wrench.



While holding the wrench to restrain the RDD arm, turn the adjustment tool Clockwise to *Reduce* the distance between the rivet mandrel and the nosepiece.

Turning the adjustment tool Counter Clockwise *Increases* the distance.

The distance from the end of the rivet mandrel to the nosepiece should be between 1/16'' and 3/32'' (1.6 - 4.9mm).

When the adjustment has been completed, reassemble the RDD end cap assembly using Lubriplate 130A/A to coat the tube.

Adjustments

RIVET DELIVERY DEVICE (RDD)

Transfer Bushing Home Adjustment

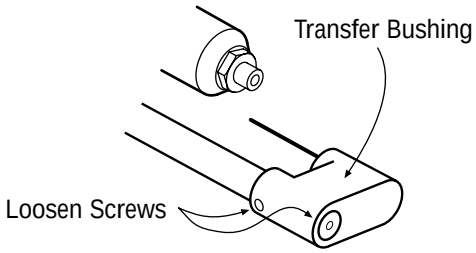
To adjust the radial alignment of the RDD Transfer Bushing, begin by loosening the two screws attaching the bushing to the arm.

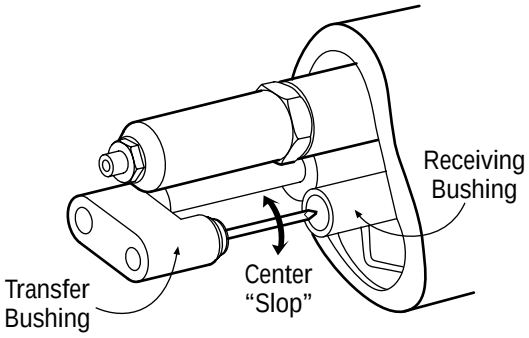
With a rivet in place, rotate the Transfer Bushing to align the mandrel with the receiving bushing. Center the radial “Slop”, then lightly tighten the Transfer Bushing set screw.

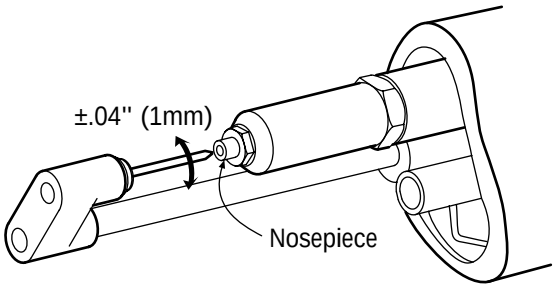
Select and activate “Extend Arm” in the Override Mode. If the nosepiece alignment error is within .04" (1mm), reinstall the set screw using Loctite 242.*

If this alignment is greater than .04" (1mm), refer to the service manual for further adjustment.

* Failure to use Loctite on this set screw can cause vacuum leaks and affect the vacuum.





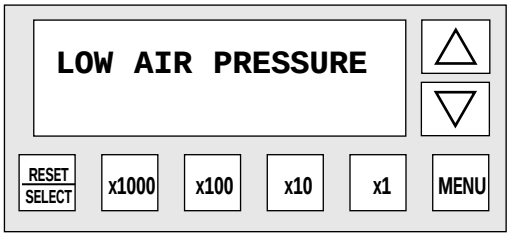


Note: Always recheck arm sensor after any adjustment.

Troubleshooting

This section of the manual describes procedures to identify and correct malfunctions. If the actions taken have not rectified the problem, call for service at 1-203-924-9341.

LOW AIR PRESSURE



1) Check for proper air pressure supply. 90 psi at 12 scfm (6.2 bar at 340 l/m)

2) Check for any broken or loose tubing connections.

3) Check air filters.

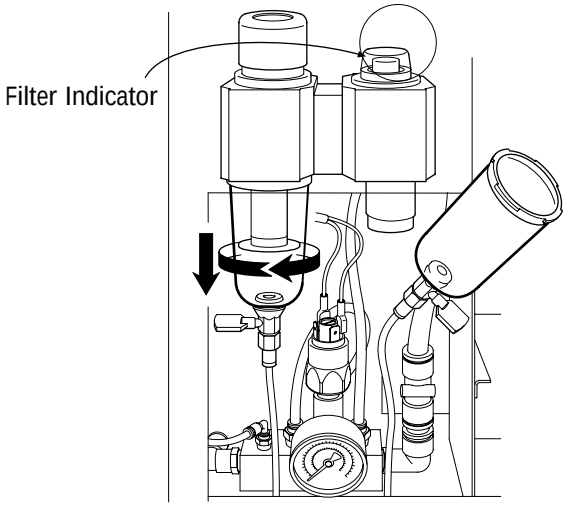
4) Check air pressure switch. (page 17)

How To Check The Air Filters

1) Check filter indicator.
Green: OK.
Red: Replace filter elements.

2) Turn air supply OFF and bleed air pressure.

3) Remove bowls with a quarter turn and pull straight down. The filter elements and bowl are accessible for cleaning or replacement.



Replacement Filter Elements: p/n PSA021578P

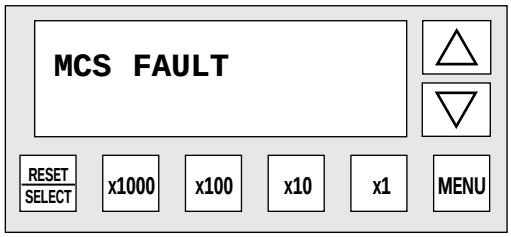
When reinstalling filter bowls, be certain that the bowls are fully *seated and locked* before turning on the air.

MCS FAULT

In the unlikely event mandrels jam in the umbilical before reaching the collection bin, a “MCS Fault” will be displayed.

When this occurs, you will hear a “beep” and all loading and setting functions will be disabled.

The following instructions will walk you through the process of correcting this fault.



Troubleshooting

MCS FAULT *continued*

To proceed:

1) Visually inspect the tubing at the tool and MCS.

2) If mandrels are present, detach the tube fittings, straighten the umbilical, and lightly tap the tubing to dislodge the mandrels. If mandrels are *not* present, press “Reset”.

3) If the MCS continues to fault, select “Diagnostics” and activate “Mandrel Sensor”. (Refer to page 17)

NOTE: It is common to experience an MCS Fault if the trigger is pulled 5 or more times with no rivet(s) in the nosepiece.

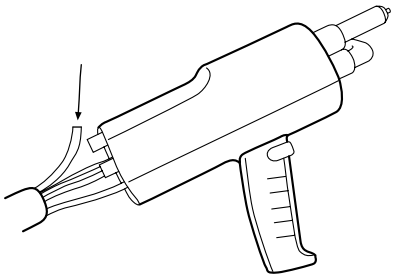
How To Check The Tube

This is checked by:

a) Enter the “Mandrel Sensor” diagnostic mode, (page 16)

b) Disconnect tube from tool.

c) Insert a mandrel into the tube.



A “beep” should be heard indicating that the mandrel has been received by the MCS bin. If this is the case, perform the “Tool Check” procedure. *If no tone is heard,* the tube may be jammed.

There are two methods to dislodge mandrels from the tube.

1) Straighten the tube at an incline and gently tap it with a tool.

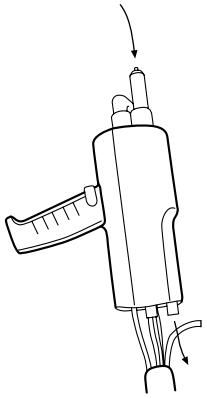
2) Form the tube in a large arc above your head and gently tap it on a vertical surface.

In the case of a severe mandrel jam in the tube, the tube must be replaced.

If you were successful in clearing all of the jammed mandrels, reassemble the tube and umbilical sleeve then press *Reset/Select* to continue riveting.

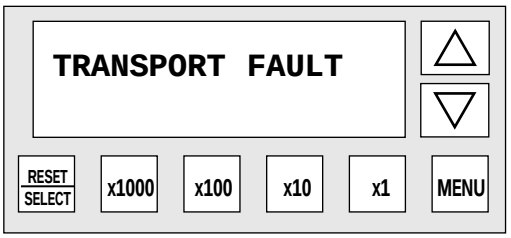
How To Check The Tool

Do this by disconnecting the tube from the tool, hold the tool vertically and insert a mandrel into the nose piece. The mandrel should pass through the tool. If not, refer to the service manual for additional information.



Troubleshooting

TRANSPORT FAULT



The Transport Fault tells us that a rivet has not been delivered to the tool. Check to see if the "Operate Tool Manually" option is active. (This option disables the auto feed function of the system). If you are in a normal operating mode while this fault occurs, follow these instructions to correct the fault.

To check the Escapement Mechanism for proper function:

1) Remove the front cover.

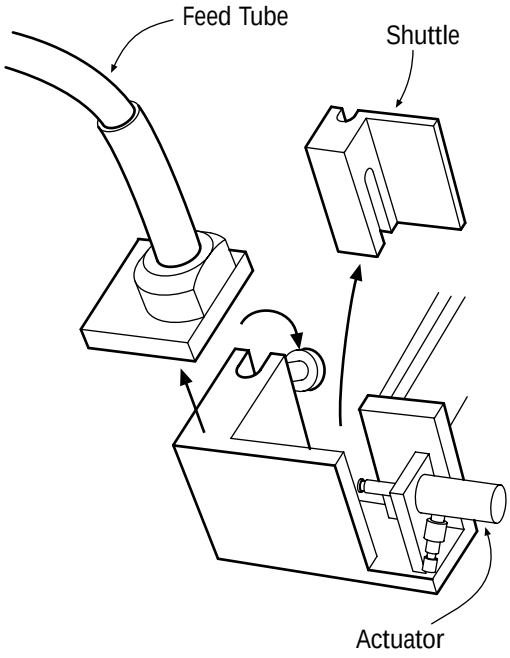
2) Check the pneumatic connections to the actuator.

3) Remove any rivets from the track.

4) Check the Escapement Mechanism for any loose or jammed rivets.

5) See that the shuttle moves freely. This may need to be cleaned. Utilize the "Escapement Shuttle" function in the Override Mode to facilitate troubleshooting.

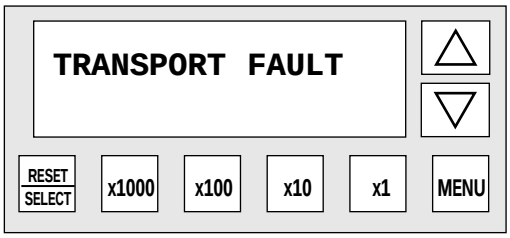
6) Check for any rivets in the feed tube.



If the previous items are functioning properly and the system is in a normal run mode, perform the diagnostic tests for the *RDD Arm Sensor* and the *Vacuum Switch* on pages 17 & 18.

When you are confident that the problem has been corrected, reassemble the escapement mechanism, close the front cover and press "RESET" to resume setting rivets.

ARM NOT RETRACTED



1) Push RDD arm back into tool manually.

2) If this problem persists, check for loose, broken air hose or fitting.

3) Perform diagnostic on the Arm Sensor. Refer to page 19.

Routine Maintenance

AIR FILTER MAINTENANCE – DAILY

On a daily basis check for moisture that may have accumulated in the air system. This fluid needs to be removed. The following sequence shows how this is done.

If you are experiencing excessive fluid accumulation, check your compressor / dryer.

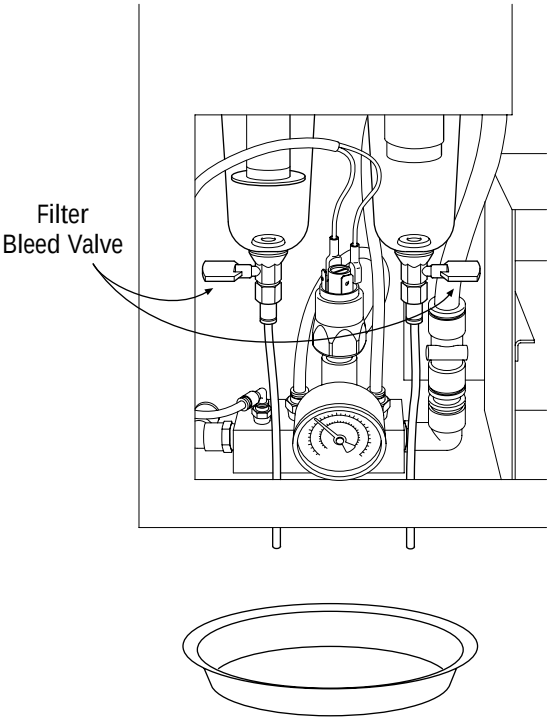
1) Remove the Front Cover.

2) Place a collection tray or tin under unit.

3) With the air ON, slowly turn the valve on the bottom of the filters to drain water.

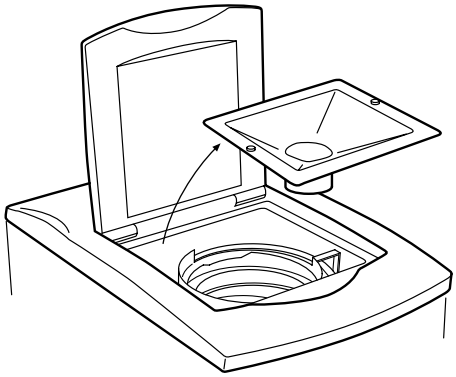
4) Tighten the valves when the water has been fully drained.

5) Reinstall the front cover.

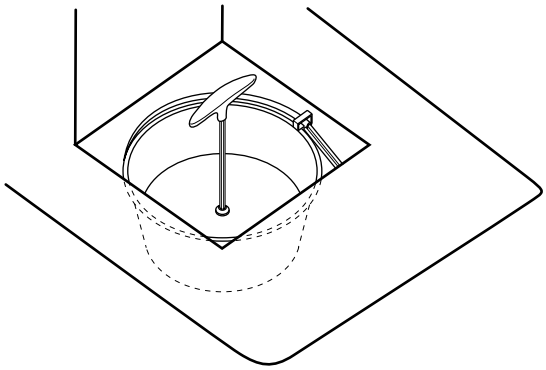


FEEDER BOWL MAINTENANCE

The feeder bowl will require periodic cleaning. The rivets leave behind a wax residue that could hamper its function. The following sequence shows how to clean the feeder bowl.



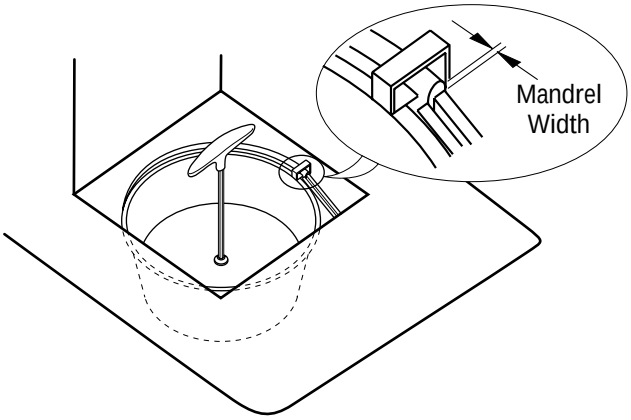
1) Remove funnel by turning the “D” rings 1/4 turn counterclockwise. Then lift the funnel out and set aside.



2) Use a 3/16" (5mm) Allen wrench to remove the screw in the bottom of the bowl. Rotate the bowl 90 degrees counterclockwise and lift out.

FEEDER BOWL MAINTENANCE *continued*

3) Blow the bowl out with shop air, dampen a shop rag with isopropyl alcohol, and wipe out the bowl.

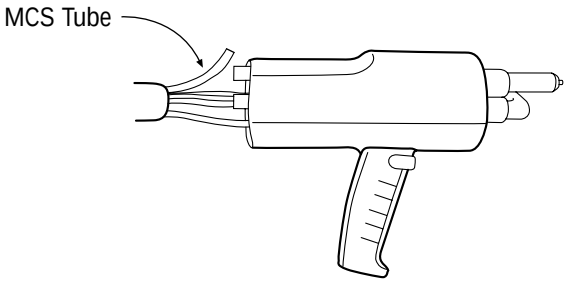


4) When reinstalling the feeder bowl, care must be taken to set a mandrel width gap between the bowl's rivet exit and the track.

5) Reinstall the funnel.

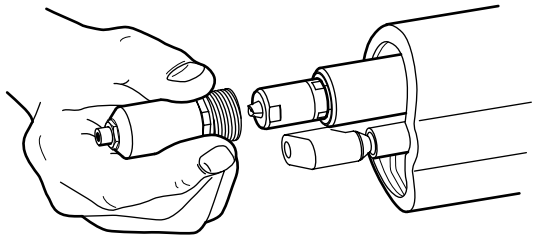
JAW LUBE PROCEDURE

To prevent mandrels from sticking in the jaw assembly, it is important to clean and lubricate this assembly. If you continue to experience problems with mandrels either sticking or rivets not being set correctly, check the individual parts as described in the service manual.



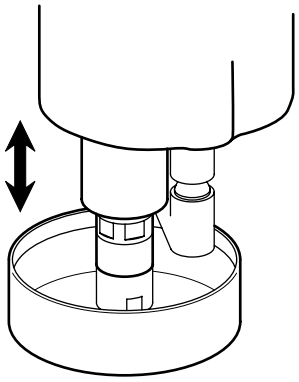
1) Turn Off the Air Supply.

2) Disconnect the MCS tube from the tool.

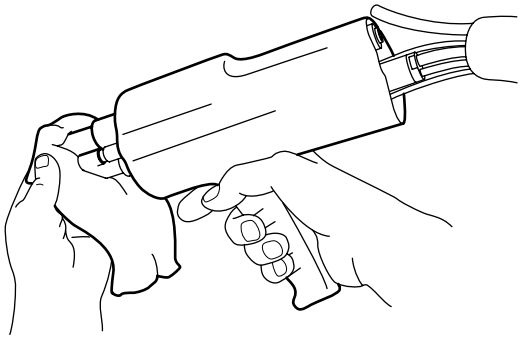


3) Remove the front half of the nose housing to expose the Jaw Guide Assembly.

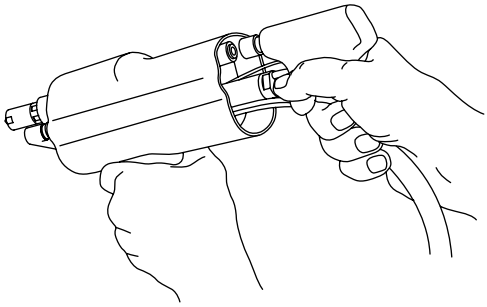
JAW LUBE PROCEDURE *continued*



4) Dip the Jaw Guide Assembly into the can of Jaw Lube and lightly depress it against the bottom of the can 2 or 3 times.

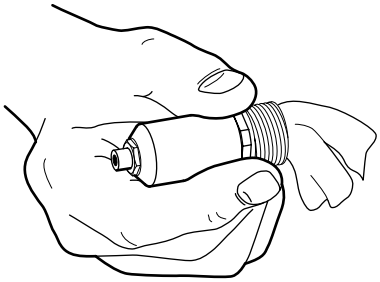


5) With a clean rag, wipe the residue from around the Jaw Guide Assembly and front end.



6) Expel excess jaw lube from the tool with an air gun.

7) Repeat steps 4, 5 & 6 two or three times.



8) With a clean rag, wipe out the inside of the nose housing.

9) Reassemble the nose housing and MCS Tube.

Routine Maintenance

POINT & SET PREVENTIVE MAINTENANCE SCHEDULE

Component/Description	Estimated Time	Light Duty	Normal Duty	Heavy Duty
Check Air Filters for Fluid Location: Front of Console	30 Sec.	Daily	Each Shift	Each Shift
Clean/Lube Jaws Location: Tool Front End	3 min.	10,000 Sets/Weekly or as indicated	5,000 Sets or as indicated	2,500 - 5,000 Sets or as indicated
Replace Jaws Location: Tool Front End	5 min.	30,000 - 50,000 Sets or as indicated	20,000 - 30,000 Sets or as indicated	Per Shift or as indicated
Replace Jaw Guide Location: Tool Front End	5 min.	250,000 Sets	100,000 Sets	50,000 Sets
Replace Jaw Pusher Spring Location: Tool Front End	5 min.	250,000 Sets	100,000 Sets	50,000 Sets
Replace Jaw Pusher/Guide Tube Location: Tool Front End	5 min.	250,000 Sets	100,000 Sets	50,000 Sets
Clean Vibra. Bowl, Track & Escapement Location: Front Console	5 min.	250,000 Sets	100,000 Sets	50,000 Sets
Replace MCS Tube Location: Umbilical	3 min.	500,000 Sets	250,000 Sets	150,000 Sets
Replace Nosepiece Location: Tool Front End	1 min.	500,000 Sets	250,000 Sets	100,000 Sets
Replace Feed Tube Location: Umbilical	5 min.	1,000,000 Sets	500,000 Sets	250,000 Sets
Check RDD Arm Alignment Location: Tool	2 min.	Weekly	Daily	Every 4 hours
Check Arm Sensors & Vac. Switch Settings Location: Operator Interface	3 min.	Monthly	Weekly	Daily
Check RDD Mounting Screws Location: Front of RDD	1 min.	Monthly	Weekly	Daily
Check/Replenish Hydraulic Oil Location: Intensifier	2 min. / 10 min.	Monthly	Weekly	Daily
Check/Replace Air Filter Elements Location: Front Console	1-3 min.	Monthly or as indicated	Weekly or as indicated	Daily or as indicated
Check/Adjust Vibratory Bowl Alignment Location: Front Console	2 min.	Monthly	Weekly	Daily
Lubricate RDD Trombone Slide Location: RDD End Cap	3 min.	Every 3 Months	Monthly	Weekly
Clean MCS Vacuum Sleeve Location: Top of MCS Housing	10 min.	Annually	Monthly	Weekly

POINT & SET PREVENTIVE MAINTENANCE SCHEDULE *(continued)*

Component/Description	Estimated Time	Light Duty	Normal Duty	Heavy Duty
Clean Transfer Bushing (remove debris) Location: RDD Arm	3 min.	Monthly	Weekly	Weekly
Check Escapement Hardware Location: Front Console	3 min.	Annually	Monthly	Weekly
Replace Front Cover Ball Clips Location: Front Console	10 min.	As Needed	As Needed	As Needed
Clean/Replace Air Shut-Off Valve Location: Front Console	10 min.	1,000,000 Sets or as indicated	500,000 Sets or as indicated	250,000 Sets or as indicated
Rebuild Pulling Head Location: Tool Head	30 min.	10,000,000 Sets	5,000,000 Sets	2,500,000 Sets
Rebuild Intensifier Location: Intensifier	30 min.	10,000,000 Sets	5,000,000 Sets	2,500,000 Sets
Rebuild RDD Location: Tool Head	15 min.	2,500,000 Sets	2,500,000 Sets	2,500,000 Sets
Rebuild Pneumatic Valves, Vac. Switch Location: Rear Console	45 min.	10,000,000 Sets	5,000,000 Sets	2,500,000 Sets
Replace Pedestal Assembly Location: Front Console	45 min.	5,000,000 Sets	5,000,000 Sets	5,000,000 Sets
Replace Air Supply Hose Location: Rear of Enclosure	1 min.	5,000,000 Sets	5,000,000 Sets	5,000,000 Sets
Replace Trigger Spring Location: Tool Cover	10 min.	2,500,000 Sets	2,500,000 Sets	2,500,000 Sets
Replace Trigger Switch Location: Tool Cover	15 min.	10,000,000 Sets	10,000,000 Sets	10,000,000 Sets