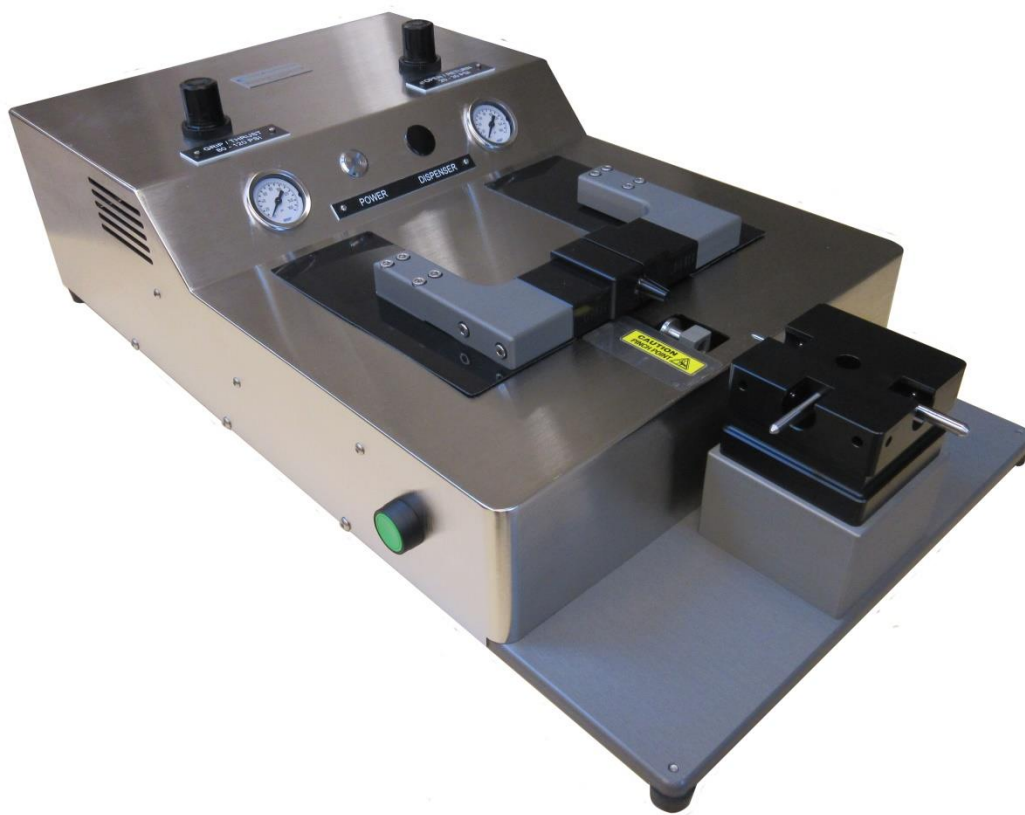


CLEAN ROOM DEVICES, INC.

CRD400SS Fitting Inserter **OPERATIONS MANUAL**



CRD400

Clean Room Devices, Inc.
10855 Dover St. Suite 100
Westminster, CO 80021



ORIGINAL INSTRUCTIONS
VERSION 1.0
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1.0 General Product and Safety Information

1.1 Product information

- The fitting inserter is designed to hold and locate soft tubing (Shore A durometer 50-100) and push it onto fittings. Contact the manufacturer for more information regarding tubing durometers outside this range.
- The minimum/maximum outside tube diameter is 3/32” to 1-3/8”.

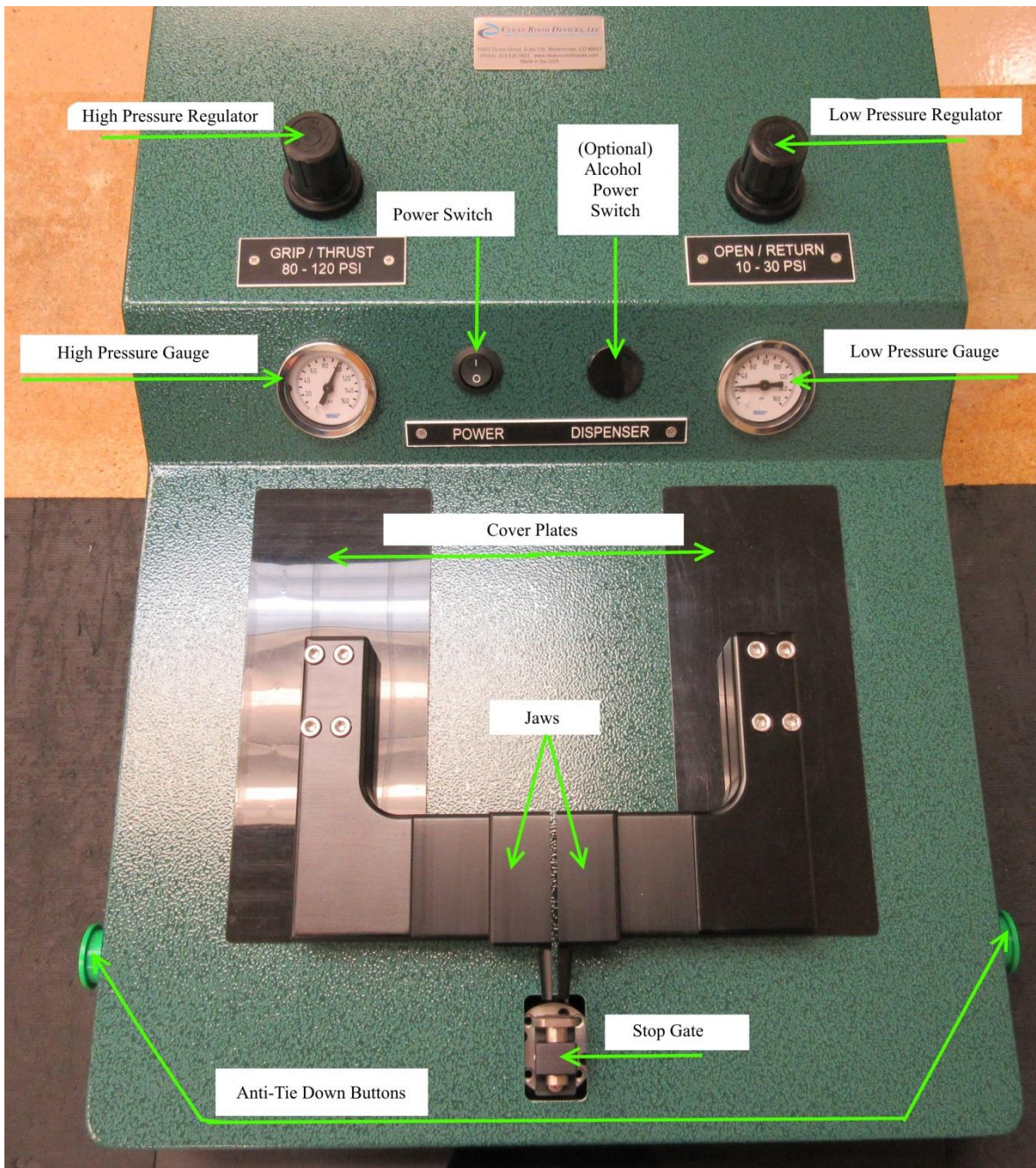


Figure 1

1.2 Safety information

- This product uses air cylinders and anti-tiedown buttons to pneumatically actuate the closing jaws. The unit is not intended for anything other than flexible tubing.
- The desired air supply should be free of moisture/contaminates, and a minimum 100 psi facility air supply is recommended. It is also recommended that a suitable filter/regulator be installed on the supply line prior to the unit to preserve the life expectancy of the air components.

CRD400 FITTING INSERTER SAFETY NOTICE

PLEASE READ CAREFULLY BEFORE CONTINUING

Warning

The fitting inserter should only be operated by trained, qualified personnel who have read and understand this manual.

The owner of this CRD400 fitting inserter is responsible for training all personnel to properly operate this machine. Failure to follow instructions may result in serious personal injury.

The operator must wear eye protection during use and maintenance of the machine.

Only the operator's hands must be used to activate the machine. (Figure 1)

The operator must have hands in proper position when activating the machine. (Figure 2)

The operator must ensure that the machine is clear before use.

Never, under any circumstances, operate the fitting inserter with any safety device disabled.

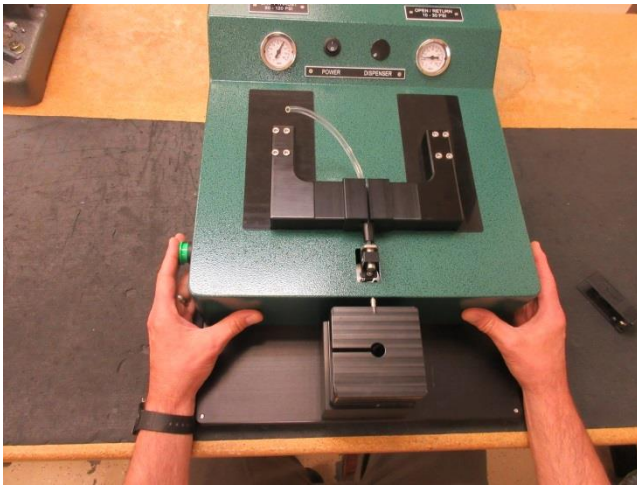


Figure 2: Correct

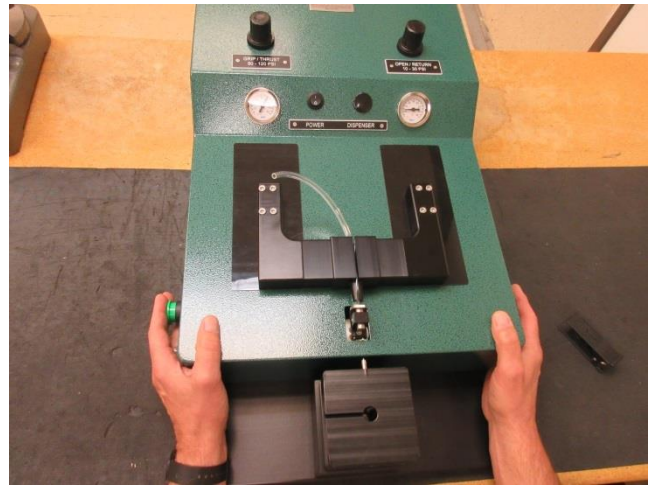


Figure 2.1: Incorrect

1.3 *Lifting & Moving Safety*

- Due to the weight of the unit (approximately 55 lbs/25 kg), the unit should always be moved or repositioned by two (2) people to reduce the possibility of injury. (Figure 2.3)

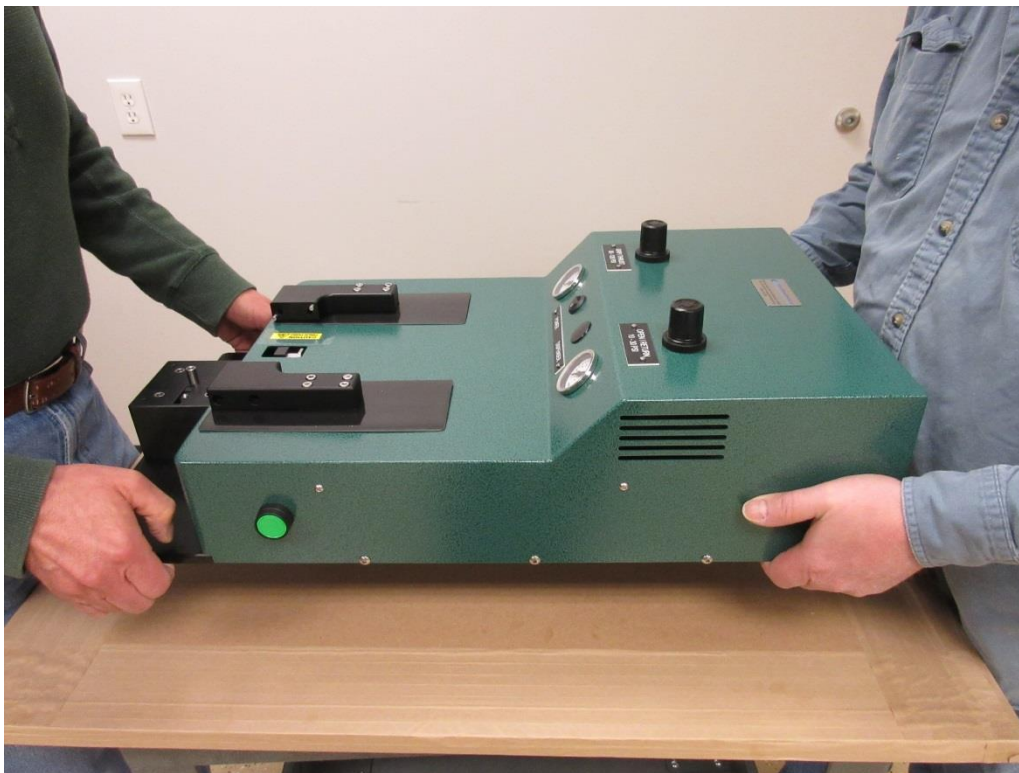


Figure 2.3: Always Team Lift for Safety

2.0 Installation

- Ensure all five (5) rubber feet are completely stabilized on your work surface prior to applying air pressure to the unit.

2.1 *Air supply*

- Connect a 1/4" air supply hose to the fitting found on the back of the fitting inserter. The air supply should be free of moisture and contaminants and provide **100-140** psi. It is important to be able to shut off the air pressure, or disconnect from the main air line. A quick-connect coupling or ball valve is recommended.

Safety Note: Keep hands clear of moving parts when connecting or disconnecting the air supply. Jaw mounts may move suddenly. Failure to do so may result in serious injury.

- Adjust Grip/Thrust pressure to 80-120 psi. (shown in Figure 3)
- Set Open/Return pressure to 20-30 psi. **Caution: Do not set above 30 psi, as high pressure can cause premature wear to the machine.**



Figure 3: Regulator assembly

2.3 *Electrical supply*

- Plug the electrical connector into the back of the fitting inserter and plug the 24V power supply into a 110V or 220V AC outlet. **The smart relay inside the machine may have as much as an eight (8) second power up time before the fitting inserter becomes fully operational.**



Figure 4: Air and power supplies

2.4 Jaw installation

- Ensure the machine is in **position 2** (Figure 18: jaw mounts forward and fully open).
- Select the jaw set that corresponds to the tube O.D. being used.
- Attach each jaw using two (2) M5 x 35mm socket head cap screws.

Critical Note: Failure to properly align the jaws may result in damage to both the jaw set and nest!

Critical Note: The machine WILL NOT operate properly without jaws installed.

- Fine tuning the semi-closed position: Inside the machine, there are two stop blocks that the jaws rest on in position 1. Fine tune the gap between the jaws, and adjust the set screw on the left stop block. **Do not let the jaws rest on the sensor imbedded in the right stop block.** Always allow a gap of approximately 1mm between the gripper and the sensor.

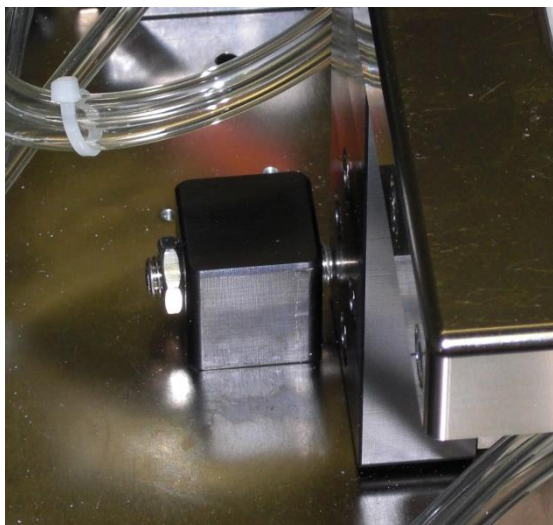


Figure 5: Left stop block, adjust set screw

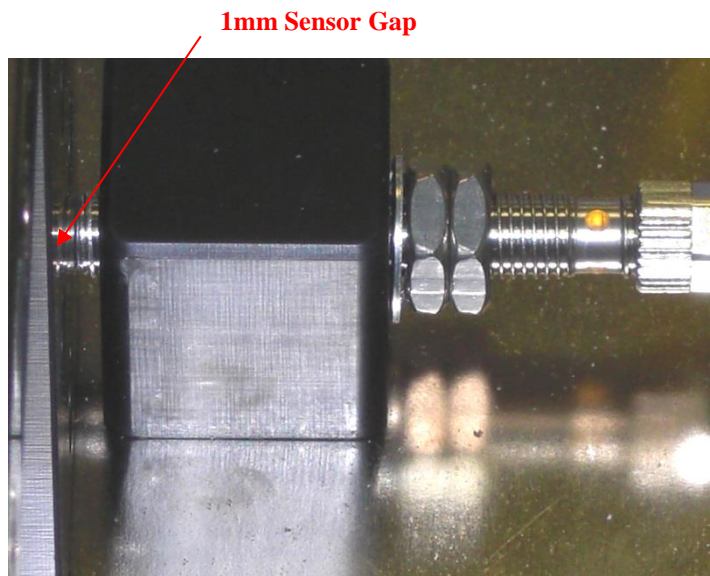


Figure 6: Right stop block, adjust to 1mm sensor gap

2.5 *Installing a rotating nest*

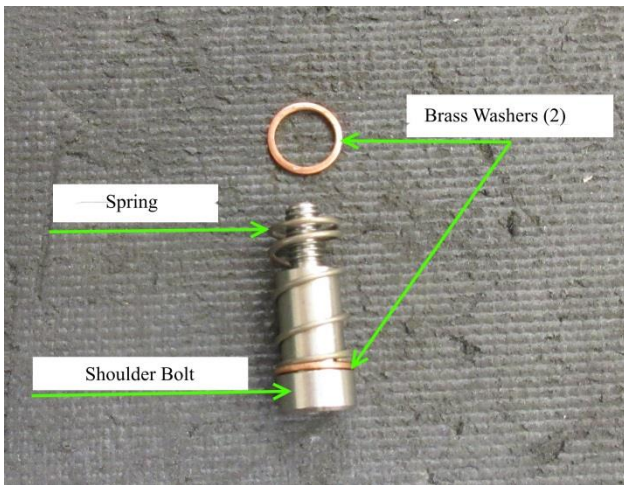


Figure 7: Hardware required to mount the nest

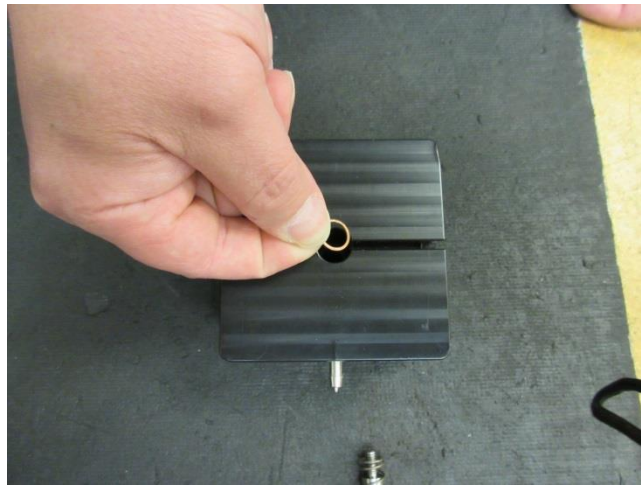


Figure 8: Placing the first brass washer

- Place the first brass washer in the bottom of the center hole in the nest. (Figure 8)

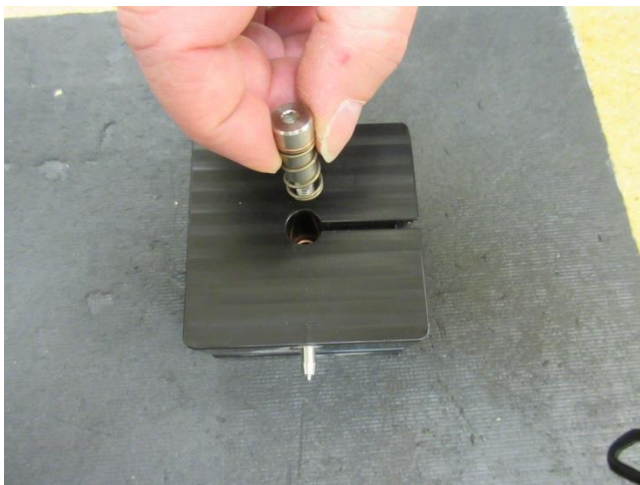


Figure 9: Inserting the shoulder bolt

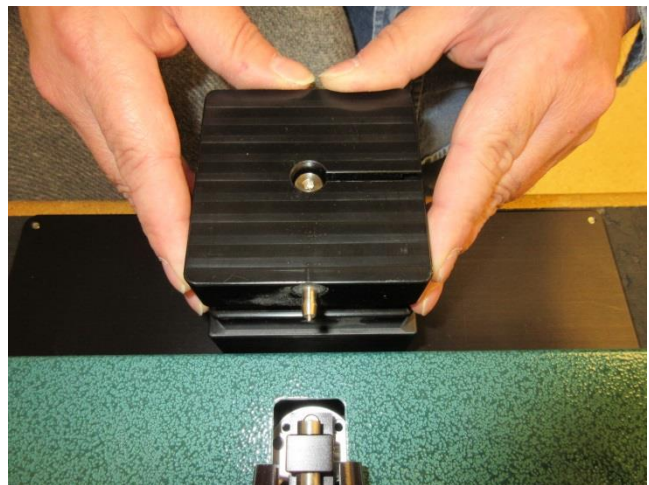


Figure 10: Mounting the nest

- Insert the shoulder bolt with the spring and second brass washer into the nest. (Figure 9)
- Place the nest on the pedestal ensuring the dowel pin is inside the bushing. (Figure 10)

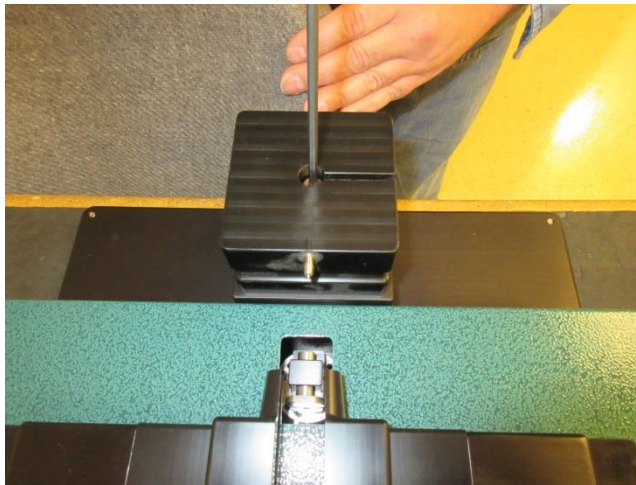


Figure 11: Tightening the shoulder bolt

- Tighten the shoulder bolt with a 4mm Allen wrench. (Figure 11)

2.6 *Installing a stationary nest*

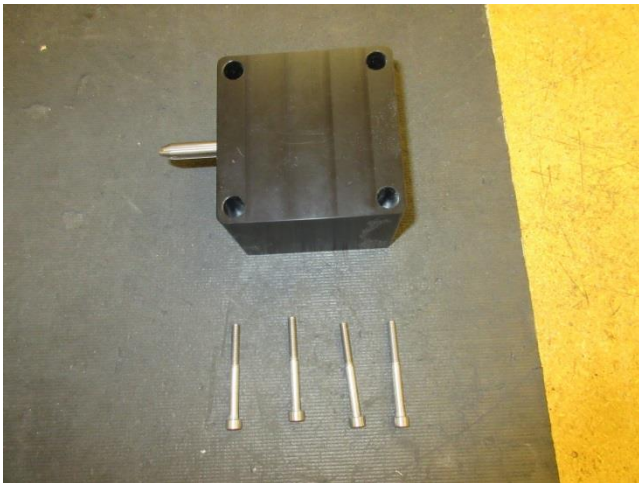


Figure 12: Stationary nest and M5 x 50mm bolts

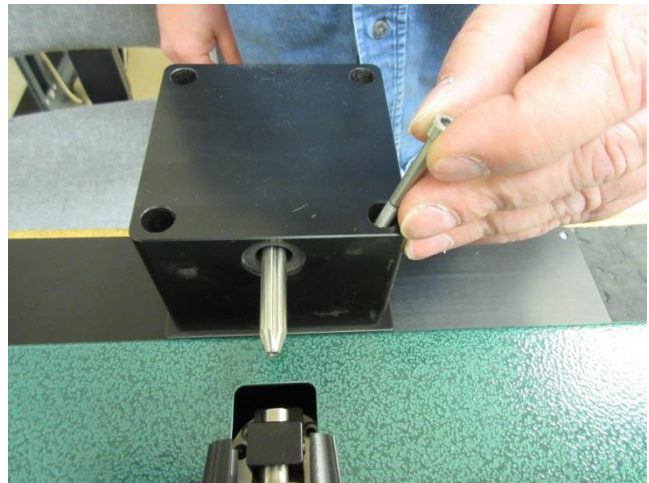


Figure 13: Placing the mounting bolts

- Place the nest on the pedestal ensuring the mounting holes line up.
- Place one (1) M5 x 50mm mounting bolt in each of the four (4) mounting holes on the nest.

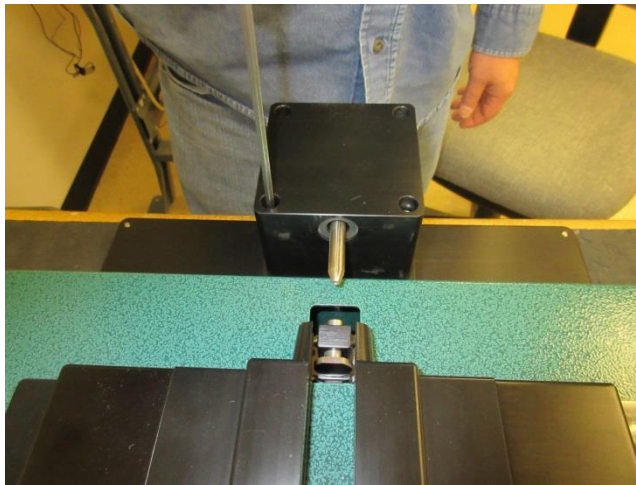


Figure 14: Tightening the bolts

- Tighten all four (4) mounting bolts to secure the nest to the pedestal. (Figure 14)

3.0 Operation

3.1 *Loading the nest and jaws*

- Lock the fitting into the nest, ensuring the fitting is properly seated. (Figure 15)

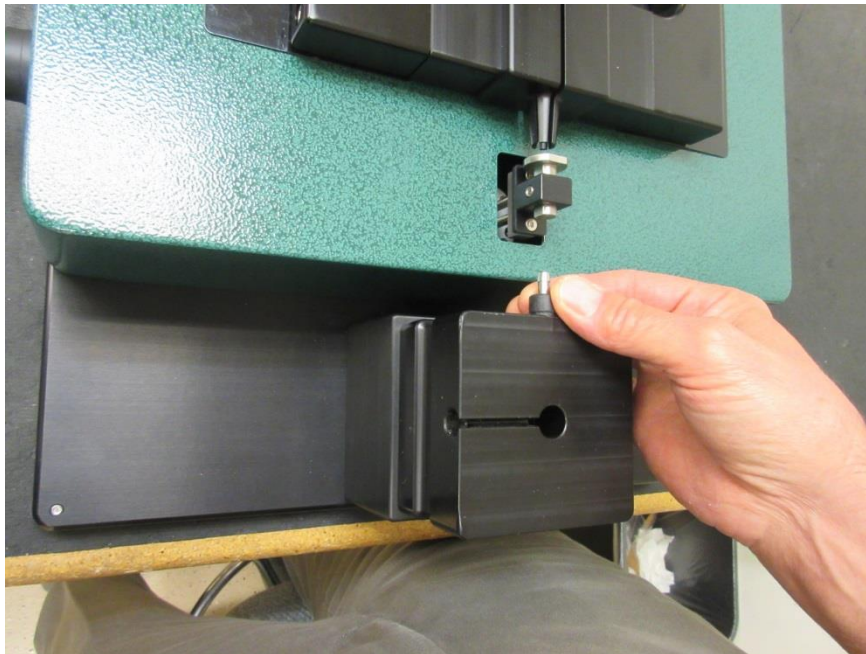


Figure 15: Seating the fitting into the nest

- With jaws in position 1 (Figure 16), insert tubing into the jaws and push the tubing against the stop gate as shown, below.

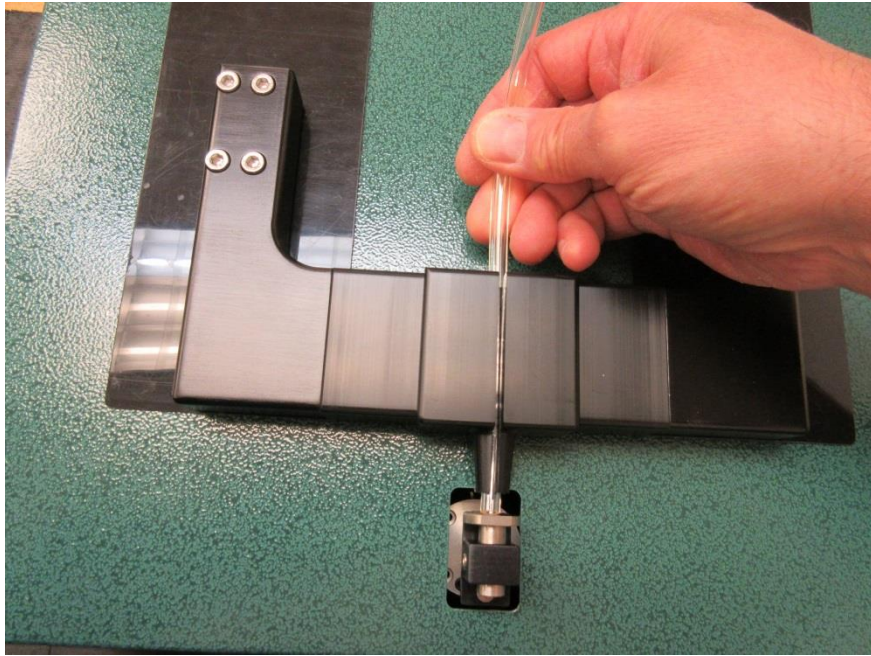


Figure 16: Placing tubing against the stop block

Warning

Make sure thumbs are not on top of the unit when pressing the anti-tiedown buttons.

- Use the anti-tiedown buttons to start the cycle—jaws close and the stop gate retracts. Tubing comes forward onto the barb. (Figure 17)



Figure 17: Machine cycle start

- Hold the anti-tiedown buttons and the machine will push the tubing onto the fitting and the jaws will fully open (Figure 18, position 2), allowing removal of the assembled components.

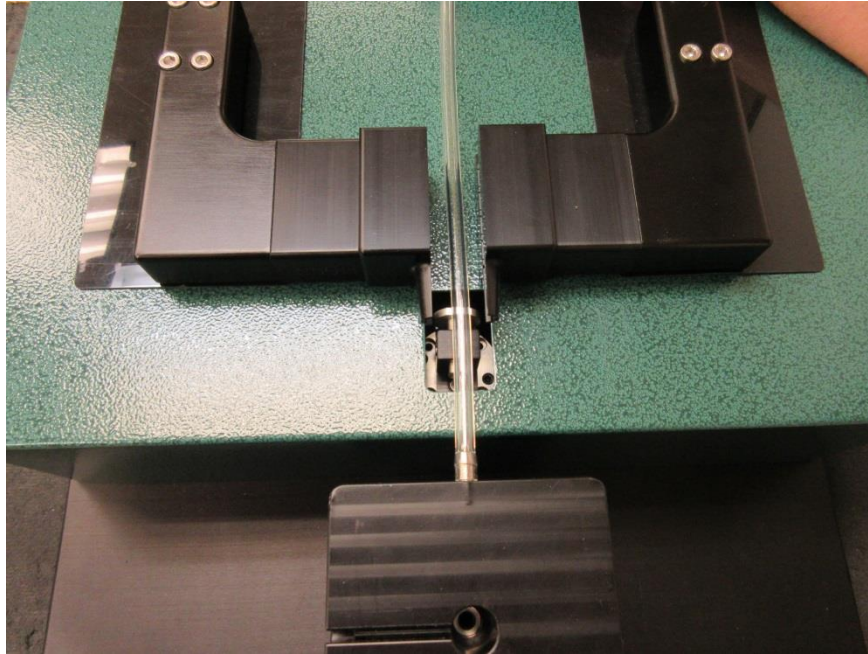


Figure 18: 'Position 2' jaws fully open.

- Note: If the anti-tiedown buttons are released during this operation, the machine will halt and release all air pressure. Remove the tubing from the jaws and the fitting from the nest (Figure 19). Reset the machine to position 1 by holding down the anti-tiedown buttons until the stop gate comes up. (Figure 20)

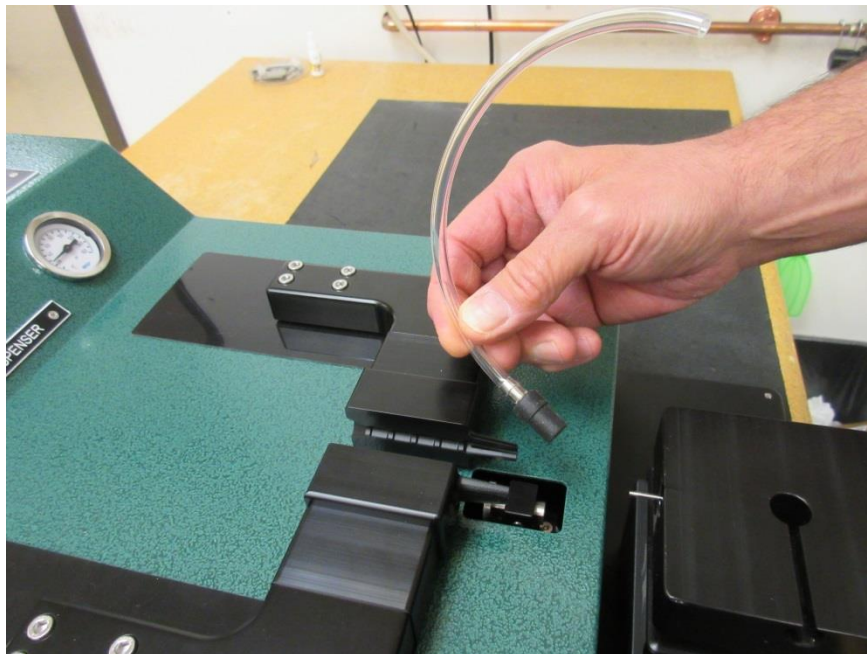


Figure 19: Removing the fitting and tubing

- After removing the fitting and tubing, press and hold the anti-tiedown buttons again. Hold until the jaws return to the semi-open position and the stop gate comes up. (Figure 20)

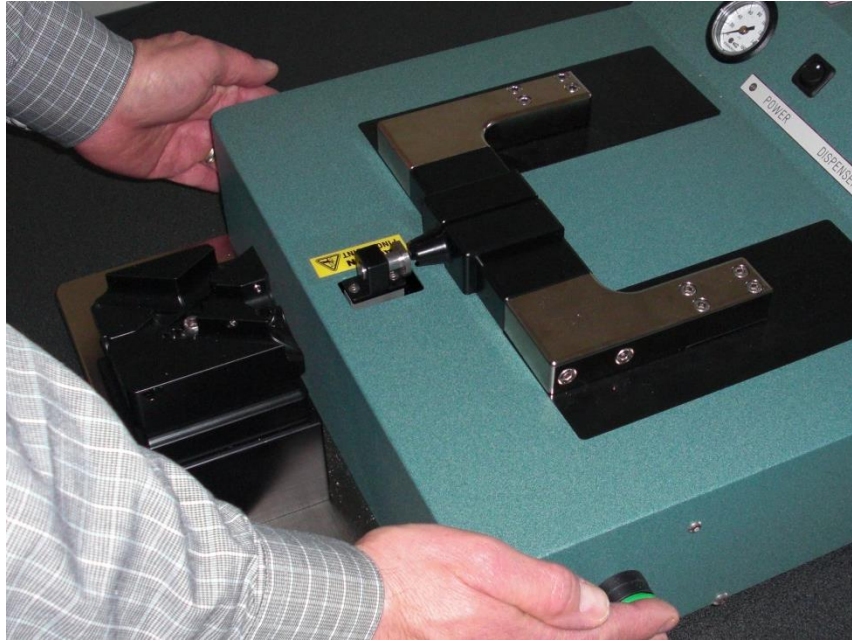


Figure 20: Cycle reset, stop gate up

4.0 Maintenance

Warning

Before performing any maintenance, disconnect air and power.

4.1 Removing the cover

- Remove the eight (8) 5mm screws from the jaw mounting blocks. (Figure 21)

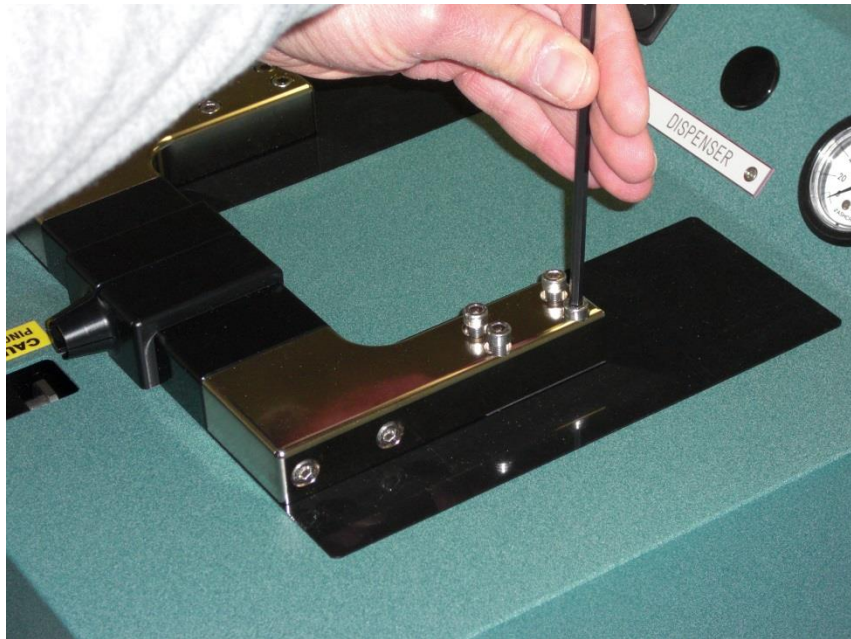


Figure 21: Removing the jaw mounting blocks

- Remove the blocks and cover plates as shown below in Figure 22.

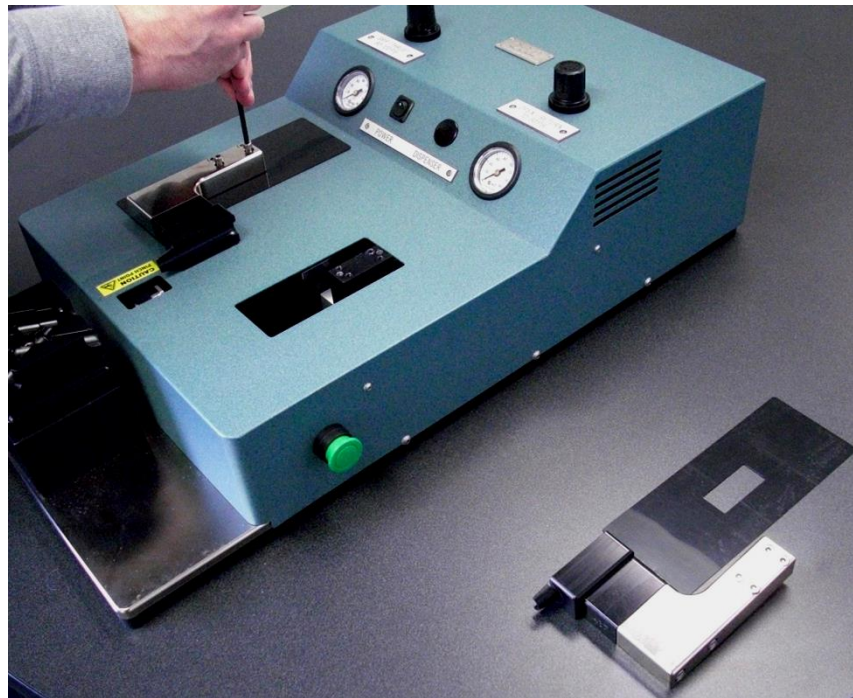


Figure 22: Jaw and cover plate removed

- Loosen the six (6) 5mm button-head screws on either side of the cover. (Figure 23)



Figure 23: Removing the cover screws

- Remove the cover and place it carefully next to the unit—wires and tubing will still be attached. (Figure 24)



Figure 24: Removed cover

4.2 *Periodic cleaning*

- Wipe down outer surfaces with alcohol, septihol, or mild detergents as required.
- Once every three months, the cover should be removed and the inside around the cylinders and jaws should be cleaned using compressed air. This will remove any collected dust.

5.0 Product Specifications

Unit Weight	55 LBS / 25 KG
Overall Dimensions	27 in. (68.6cm) lg. x 17 in. (63.5cm) w. x 8.5 in. (21.6cm) ht.
Minimum/Maximum PSI	80 PSI/120 PSI
AC Power Supply	110-120 VAC, 50-60 Hz, 3A

6.0 Troubleshooting

Operating Error	Action
Unit does not operate.	<ol style="list-style-type: none"> 1. Check the facility air connection. 2. Check all air hose connections on the unit. 3. Check electrical power, 110/220VAC 4. Check power supply output voltage (24VDC) 5. Check that the nest is all the way down.
Tubing does not go on the fitting / all the way on.	<ol style="list-style-type: none"> 1. Adjust stop gate position 2. Adjust thruster air pressure—should be 80-120 psi. 3. Adjust thruster speed 4. Align jaws with nest

Note: For instructions and photos concerning removing the cover of the CRD400, refer to section 4.1 *Removing the cover*, above.

6.1 Adjusting the stop gate

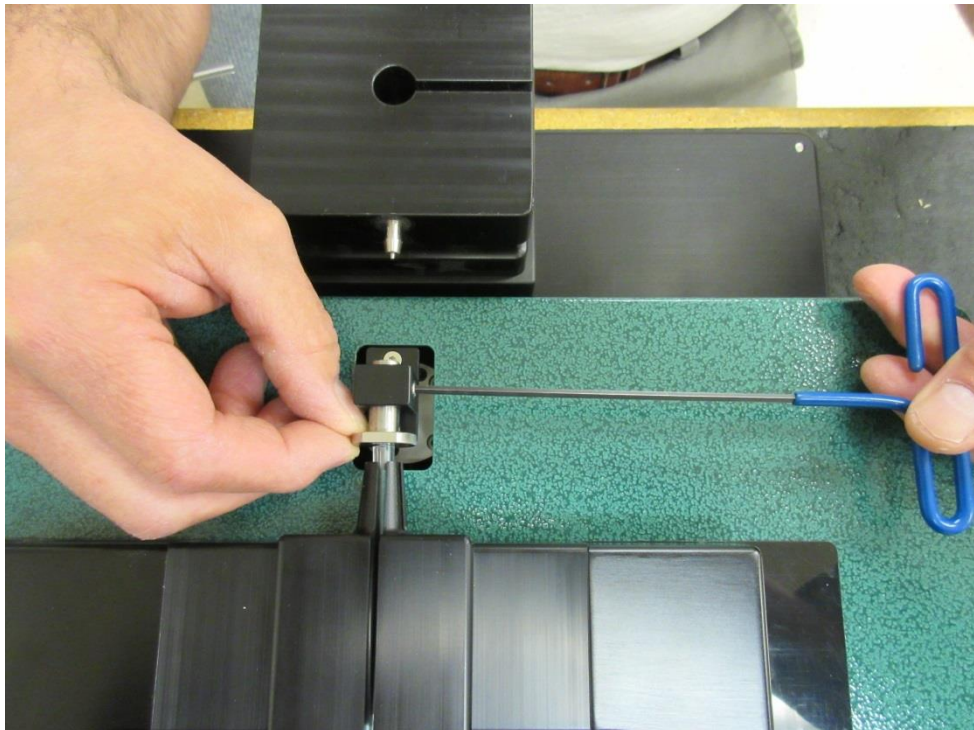


Figure 25: Adjusting the stop gate

- Loosen the set screw using a 2.5mm Allen wrench. (Figure 25)
- Slide the stop gate forward or backward, allowing more, or less, tubing to stick out of the jaws.
- Allowing too much tubing to stick out of the jaws can cause a misalignment, due to the curl. (Figure 26)

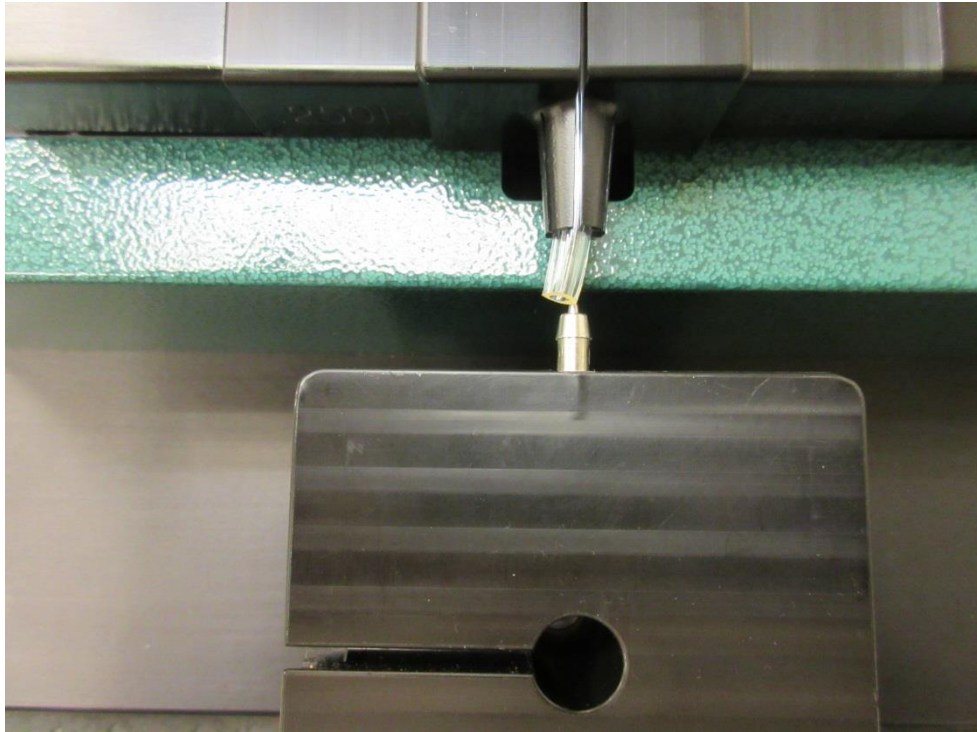


Figure 26: Too much curl in the tubing

6.1 Adjusting the thruster speed

- If adjusting the stop gate does not allow for full insertion, adjusting the thruster speed may help.
- Adjust the rear flow valve on the thruster to speed up, or slow down, the forward movement of the thruster. (Figure 27)

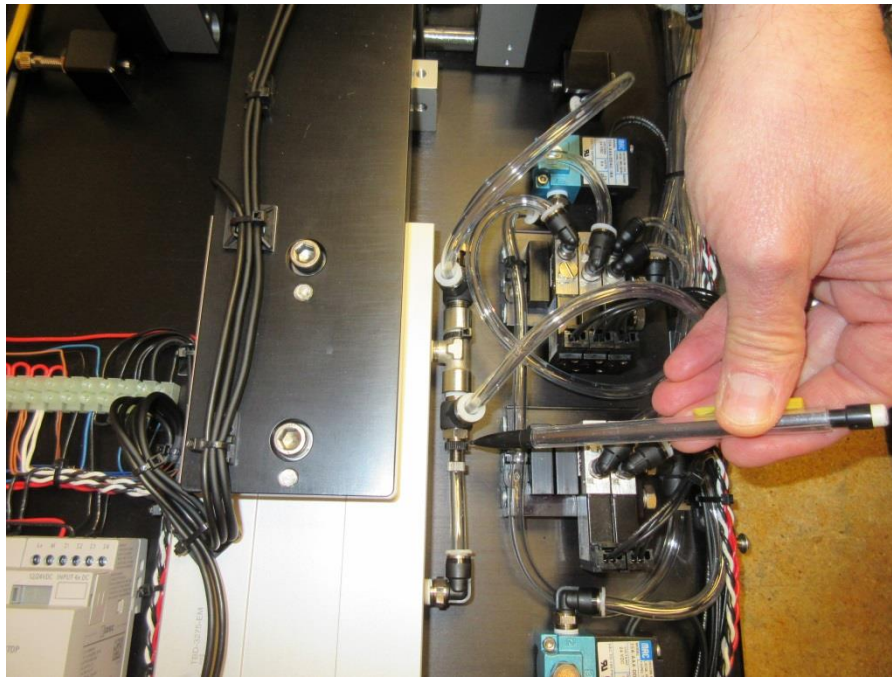


Figure 27 – Location of the flow valve on the thruster cylinder

6.2 Procedure to align the jaws with the nest

Warning

Make sure power and air are disconnected.

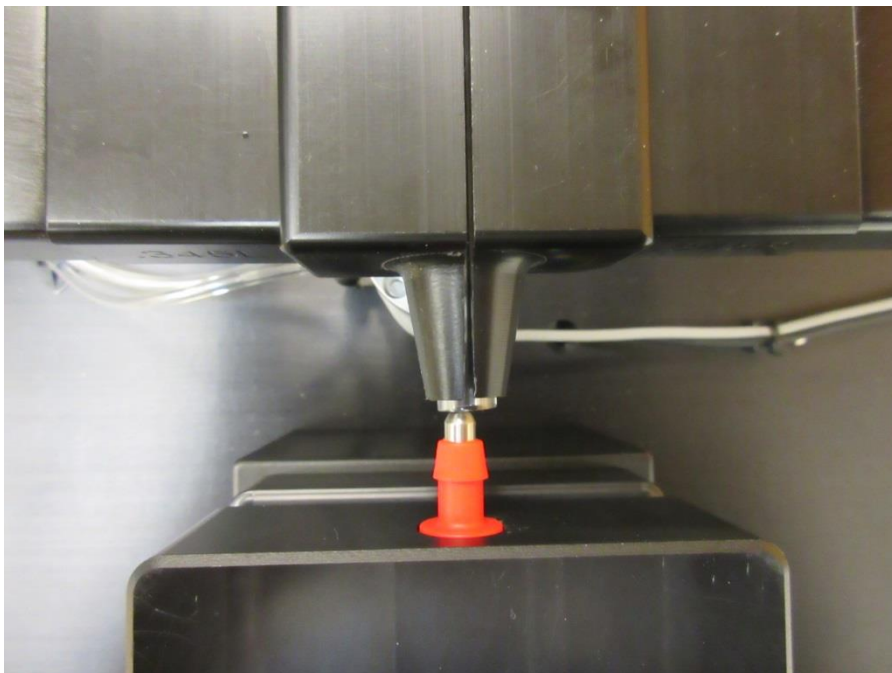


Figure 28 – Jaws not aligned with the nest

- Turn off the power switch located on the top of the cover so there is no air pressure to the unit.
- Insert the tubing into the jaws, with about 1/16" (1.5 mm) of the tubing sticking out past the end of the jaws.
- Squeeze the jaws firmly together and slide the jaws forward to the nest.
- If the tubing is not aligned with the fitting in the nest (see Figure 28, above) adjusting the gripper will be necessary.

Warning

Misalignment of the tube and the fitting in the nest can cause the fitting to jump out of the nest.

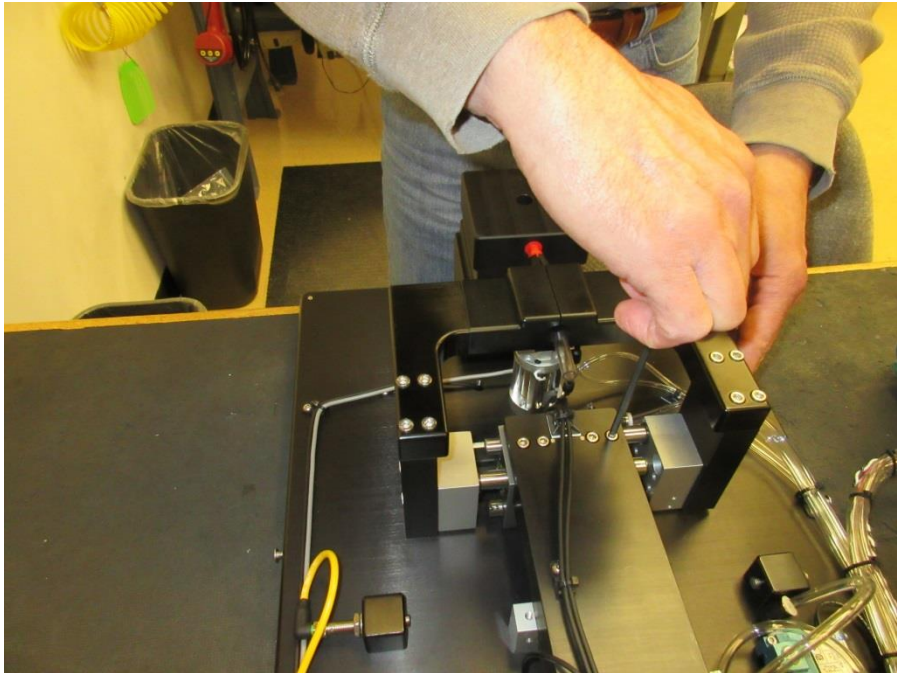


Figure 29 – Loosen the four (4) bolts on the gripper

- Loosen the four (4) bolts on top of the gripper with a 5/32" Allen wrench. (Figure 29)

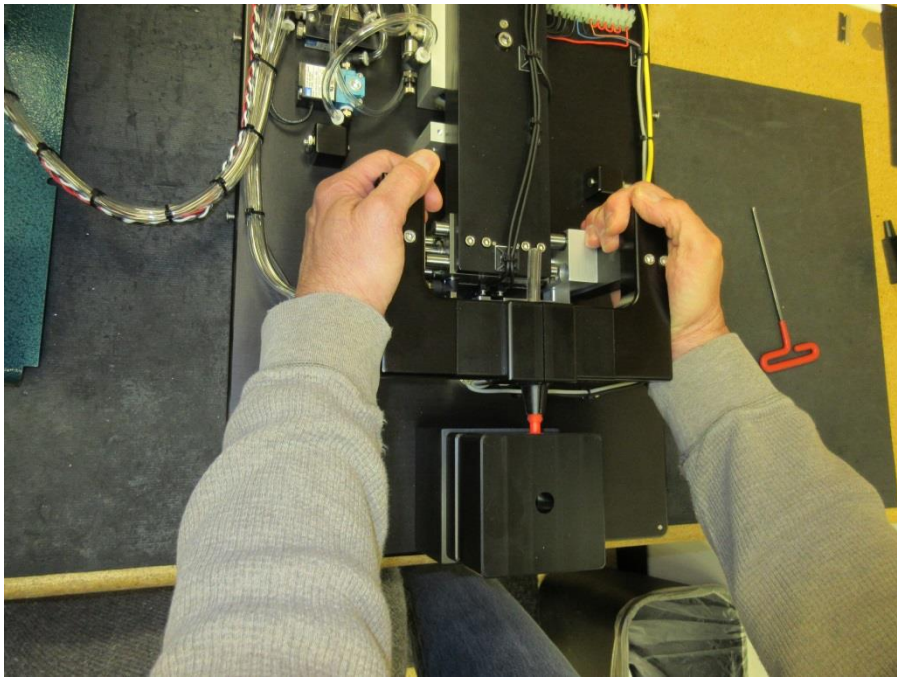


Figure 30 – Pulling the tubing onto the fitting in the nest

- Align the tubing with the fitting located in the nest, and pull the tubing forward onto the fitting. (Figure 30)

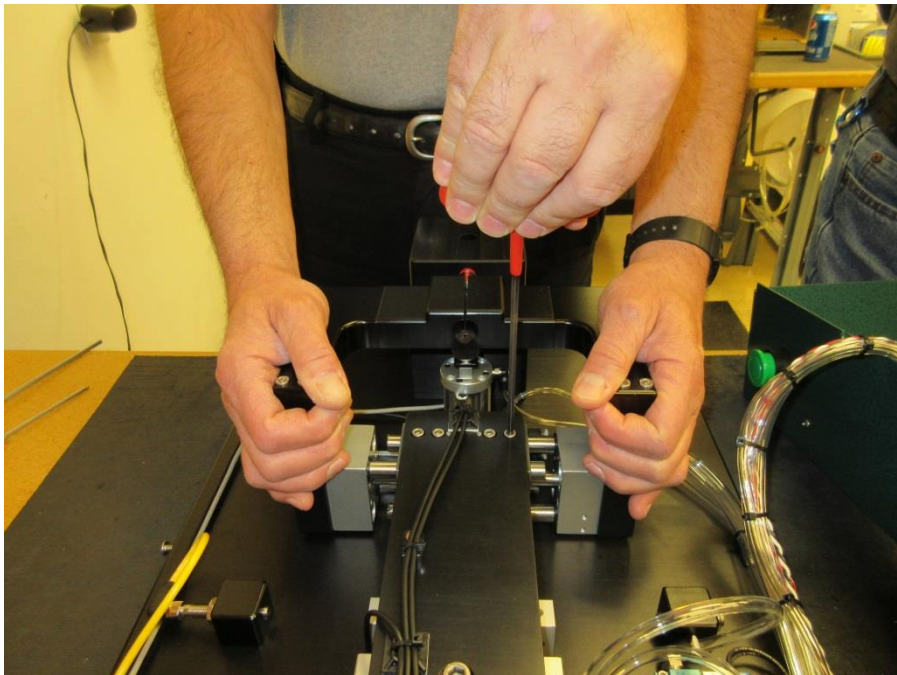


Figure 31 – Holding the gripper in place and tightening the mounting bolts

- **Note:** This step will require two (2) people. Squeeze the jaws firmly together and pull the jaws forward until the tubing seats on the barb of the fitting. While one person holds the gripper in place, the other tightens the four (4) bolts on top of the gripper with the 5/32” Allen wrench. (Figure 31)

- See Figure 32, below, for an example of properly aligned jaws.

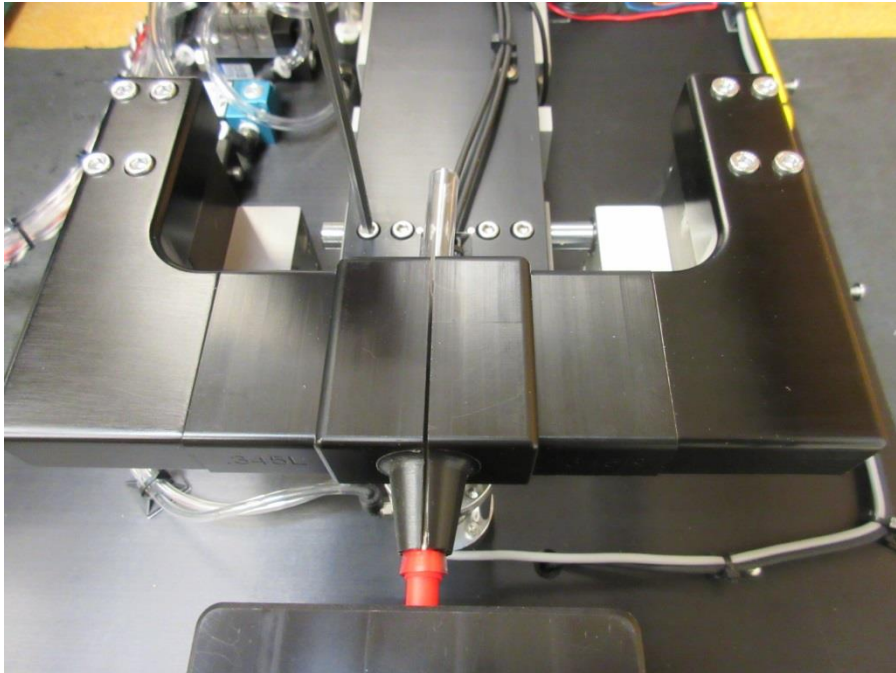
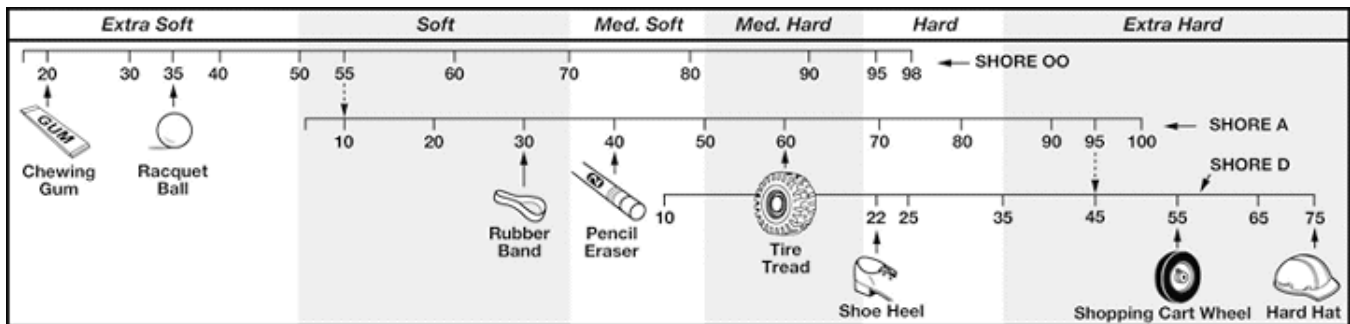


Figure 32 – Properly aligned jaws

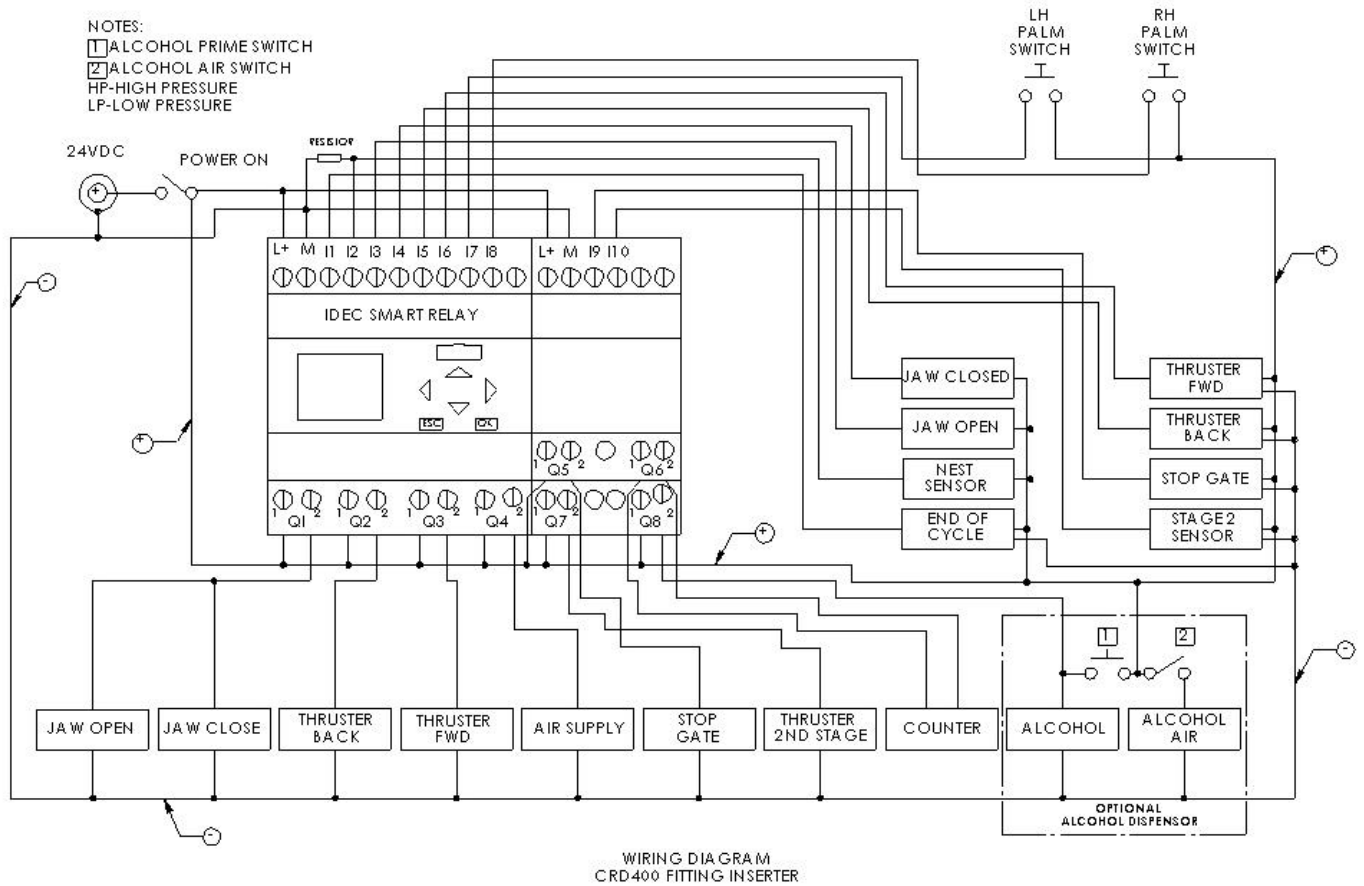
- To reinstall the cover, simply reverse the procedure outlined in section 4.1 *Removing the cover*, above. Please make sure that all six (6) of the cover screws are properly retightened to secure the cover.

7.0 Durometer Scale

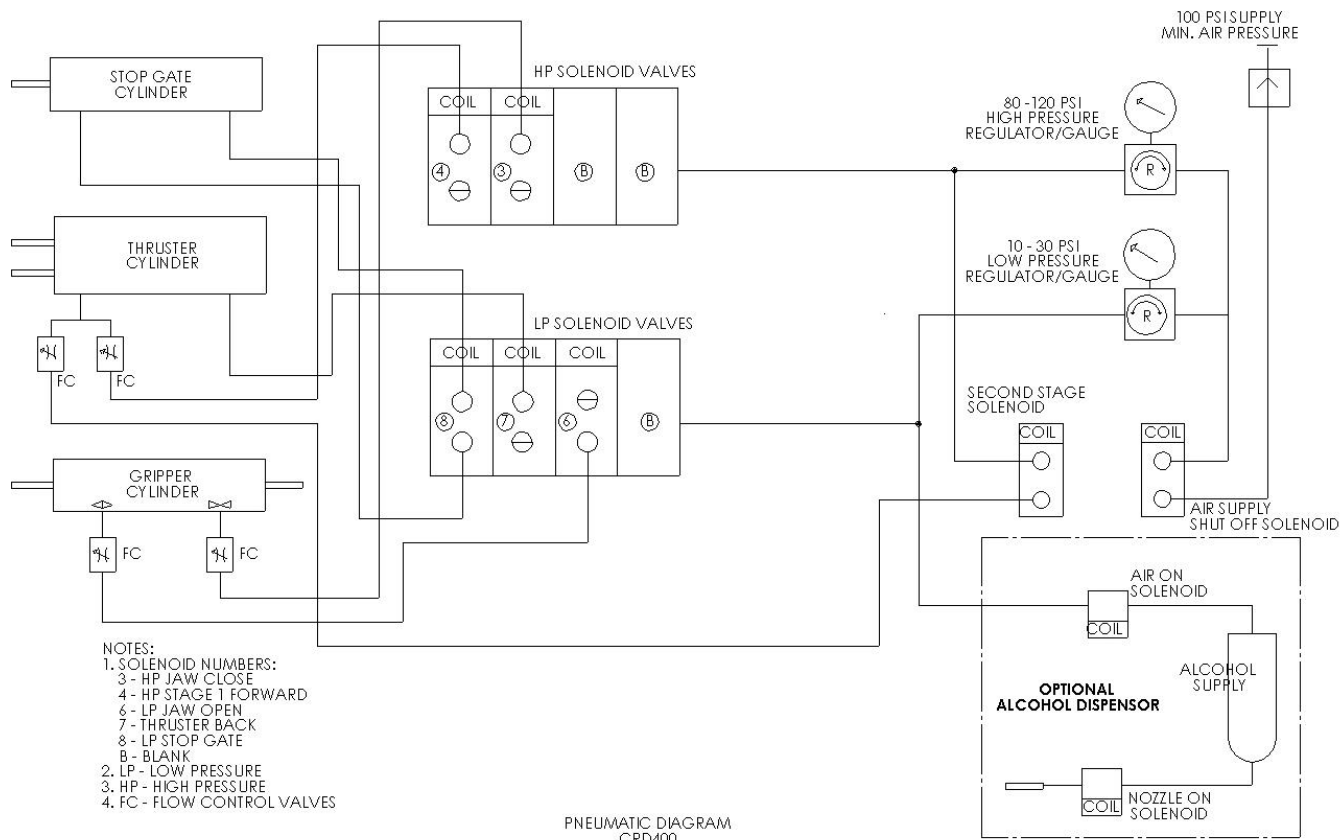


Note: Tubing durometer range: 50-100 Shore A. Contact the manufacturer for applications outside this range.

8.0 Electrical and Pneumatic Diagrams

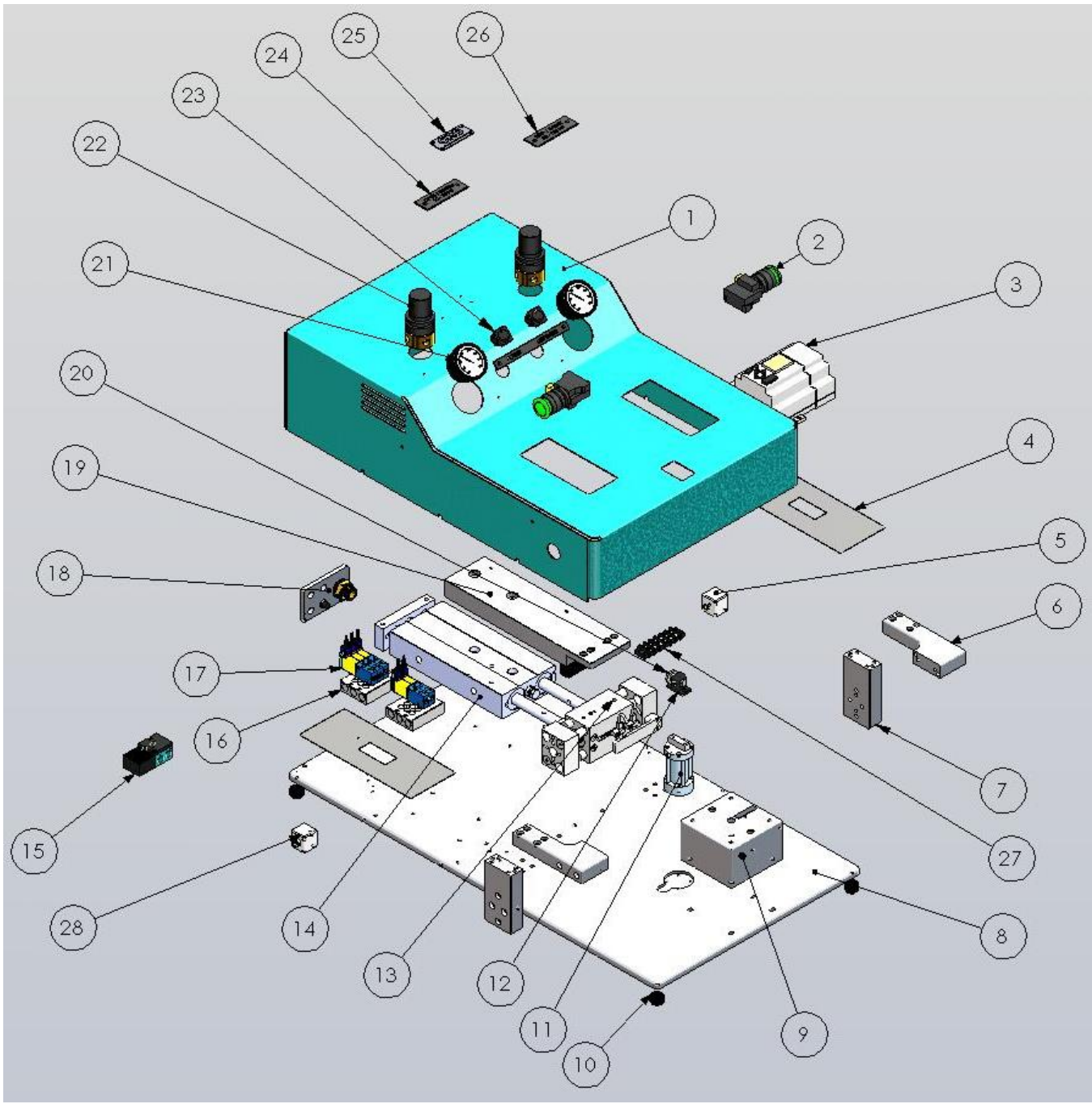


**Note: Schematic drawings are provided for troubleshooting only—
 not for modifying the machine in any way!**



**Note: Schematic drawings are provided for troubleshooting only—
 not for modifying the machine in any way!**

9.0 Parts List



ITEM NO.	QTY (EA.)	DESCRIPTION	CRD P/N
1	1	Cover, Sheet Metal	CD004-007
2	2	Idec Green Mushroom Switch	P00113
3	1	Smart Relay	P00107
4	2	Cover Plates	CD004-013
5	1	Stop Block, Right	CD004-046
6	2	Jaw Mount, Upper, Right/Left	CD004-002/3
7	2	Jaw Mount, Lower	CD004-039
8	1	Base Plate	CD004-014
9	1	Pedestal	CD004-008
10	5	Rubber Feet	P00026
11	1	Bimba Cylinder	P00194
12	1	T Bracket, Stop Block	CD004-048
13	1	PHD Grippers	P00105
14	1	Bimba Twin Bore Air Cylinder	P00103
15	1	Mac Valve, 3-way	P00108
16	2	Manifold, Mac Valves	P00091
17	5	Mac Solenoid Valves	P00093
18	1	Service Panel	CD004-041
19	1	Transition Plate	CD004-001
20	1	D Rod, Stop Block	CD004-047
21	2	Panel Mount Pressure Gauge	P00111
22	2	Regulator, Air	P00066
23	1	Round Rocker Switch	P00165
24	1	Name Plate, Insert Pressure	CD004-021
25	1	Name Plate, CRD	CD001-027
26	1	Name Plate, Grip Pressure	CD004-020
27	1	Terminal Strip, 6 Pole	P00025
28	1	Stop Block, Left	CD004-040

10.0 Warranty

10.1 Warranty

The manufacturer warrants the product manufactured by it, when properly installed, operated, applied and maintained in accordance with the procedures and recommendations outlined in the manufacturer's operation manual, to be free from defects in material or workmanship for a period as specified below, provided such defect is discovered and brought to the manufacturer's attention within the stated warranty period.

The manufacturer will repair or replace any product or part determined to be defective by the manufacturer within the warranty period, provided such defect occurred in the normal service and not as a result of misuse, abuse, neglect or accident. Normal maintenance items requiring routine replacement are not warranted. The warranty covers parts and labor for the warranty period unless otherwise specified. Repair or replacement shall be made at the factory or the installation site, at the sole discretion of the manufacturer. Any service performed on the product by anyone other than the manufacturer must first be authorized by the manufacturer.

Unauthorized service voids the warranty and any resulting charge or subsequent claim will not be paid. Products repaired or replaced under warranty shall be warranted for the unexpired portion of the warranty applying to the original product.

The foregoing is the exclusive remedy of any buyer of the manufacturer's product. The maximum damages liability for the manufacturer is the original purchase price of the product or part.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL, OR STATUTORY, AND IS EXPRESSLY IN LIEU OF THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. THE MANUFACTURER SHALL NOT BE LIABLE FOR LOSS OR DAMAGE BY REASON OF STRICT LIABILITY IN TORT OR ITS NEGLIGENCE IN WHATEVER MANNER INCLUDING DESIGN, MANUFACTURE OR INSPECTION OR THE EQUIPMENT OR ITS FAILURE TO DISCOVER, REPORT, REPAIR, OR MODIFY LATENT DEFECTS INHERENT THEREIN.

THE MANUFACTURER, HIS REPRESENTATIVE OR DISTRIBUTOR SHALL NOT BE LIABLE FOR LOSS OF USE OF THE PRODUCT OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES, OR DAMAGES INCURRED BY THE BUYER, WHETHER ARISING FROM BREACH OF WARRANTY, NEGLIGENCE OR STRICT LIABILITY IN TORT.

The manufacturer does not warrant any product, part, material, component, or accessory manufactured by others and sold or supplied in connection with the sale of manufacturer's products.

10.2 Warranty Period

Parts and labor are for ninety (90) days from the date of shipment from the factory. Freight to the factory on units that the manufacturer requests to be returned shall be paid by the purchaser, all return freight to be paid by the manufacturer; means of transportation to be specified by the manufacturer.

For additional information contact: www.cleanroomdevices.com

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11.0 Declaration of Conformity