Machine Maintenance Seminar

Review Manual For:
PP50 Multi-head Welder

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Introduction

The Gripnail PP-50 power pinner multi-head is designed to require minimum maintenance. The Multi-Head may be equipped with 5 or 6 Heads on a common Head frame. The PP-0 is PLC controlled, which simplifies trouble shooting. The PP-50 requires 1/3 HP parasitic drive from the coil line. Two Clutch Assemblies drive the Carriage to match duct speed. The Weld Pin Tracks are split, allowing a supply of Weld Pins to move with the Carriage during the weld process. The Carriage is not required to travel back to the Home position after every weld. This reduces wear on the Carriage support/drive systems. All hose connections between valves and cylinders use push-fit type fittings. These fittings save maintenance time if lubrication or replacement is required on any item.

Operator Safety

Proper safety precautions must be observed with any piece of equipment. This section contains several guidelines designed to ensure operator safety. Follow these direction at all times.

REMEMBER—SAFETY FIRST!

Five Safety Rules

1. DO NOT OPERATE this machine without all covers and guards in place.

2. DISCONNECT all electrical power and compressed air sources before servicing. Follow OSHA STANDARD 1910.147 “CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)”

3. TROUBLESHOOTING should be done by qualified personnel only.

4. THE OPERATOR should always wear the personal protective equipment as outlined by his/her employer, such as eye and ear protection, to avoid injury.

5. MAINTAIN the equipment in good operating condition.

PowerPinner 50 Multi-head Welder

General Overview of Daily Check / Maintenance

Lubrication

Lubrication intervals of cylinders, and drive and load valves is determined by clean air and low humidity. Depending on the amount of machine usage, all lubrication intervals may vary.

- Drive and load cylinders come pre-lubricated from the factory.
  - Additional lubrication is not initially needed.
- Drive cylinder guide rods should be cleaned and lubricated weekly.
- Track gate valves should be lubricated weekly.
- Carriage linear bearings should be greased monthly.
- Belt shaft bearings should be greased once a month.

Alignment

All parts come perfectly aligned from the factory when initially installed. When replacing parts, it is **imperative** to install new parts to factory recommended alignment to avoid malfunctions.

Specific alignment requirements will be discussed in detail in subsequent sections.

Air Pressure

Air pressures regulators are factory set to a default of:

- 55 PSI on the Main Gauge.
  - This controls the air pressure to the Drive Cylinders & Carriage Return Cylinders.
- 30 PSI on the Secondary Gauge.
  - This controls the air pressure to the Load Cylinders & Upper Track Stop Cylinders.

Air pressure requirements may vary depending on vintage of the machine.

Load valve and cylinder air flow can be regulated by adjusting needle valves, which are located on the inlet air lines of each individual load valve.

Tip Maintenance

Weld tips should be cleaned daily if machine is used daily.

NEVER USE grinders or files on upper or lower weld tips

Gripnail recommends the use of only one or more of the following:

- 3M abrasive pads
- Emery cloth
- Fine grade sand paper
  - When tips become worn or pitted, they need to be replaced.
  - Due to the heating caused by the welding process, Upper Weld Tip metal expands and contracts causing Tips to loosen.
    - **Tighten Upper Weld Tips daily.**

Load Cylinder

Adjustments / Alignment

(Figure 1) is an example of an extracted Load Cylinder Assembly.

- Load cylinder, if properly aligned (Figure 2), should be so that pins can load freely onto the center of the weld tip.
- You should be able to fit index and middle fingers behind the transfer block and pull forward to load a pin.
    - Cylinder, if properly aligned (Figure 3), should move forward with minimal resistance and upon release, should spring back into original position with a pin loaded past the shoulder into the v-notch.
- If you are experiencing pin feed issues, it could be caused by a misalignment.
    - (Figures 4), (Figure 5), and (Figure 6) show common misalignments and their causes.

Figure 1

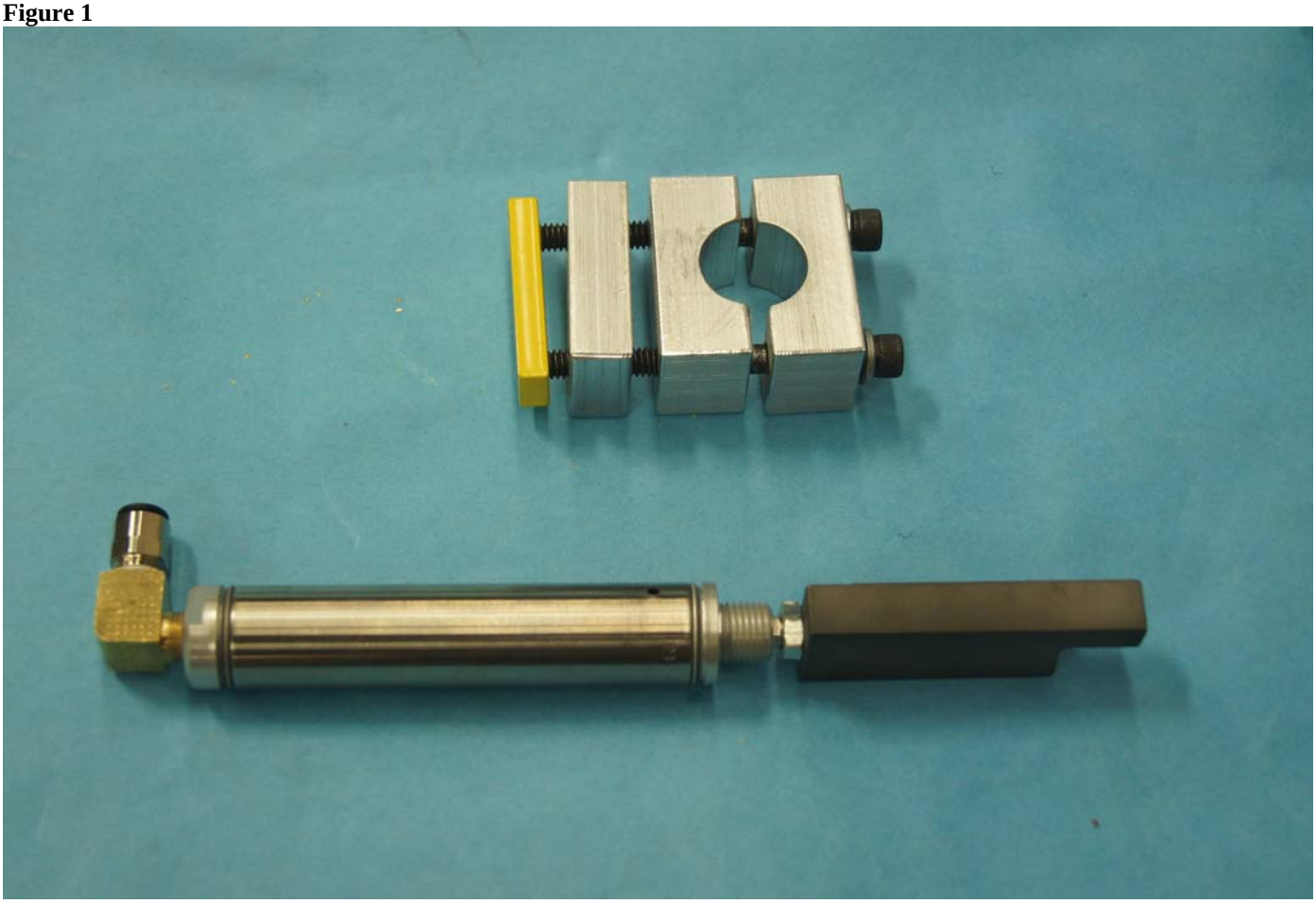


Figure 2

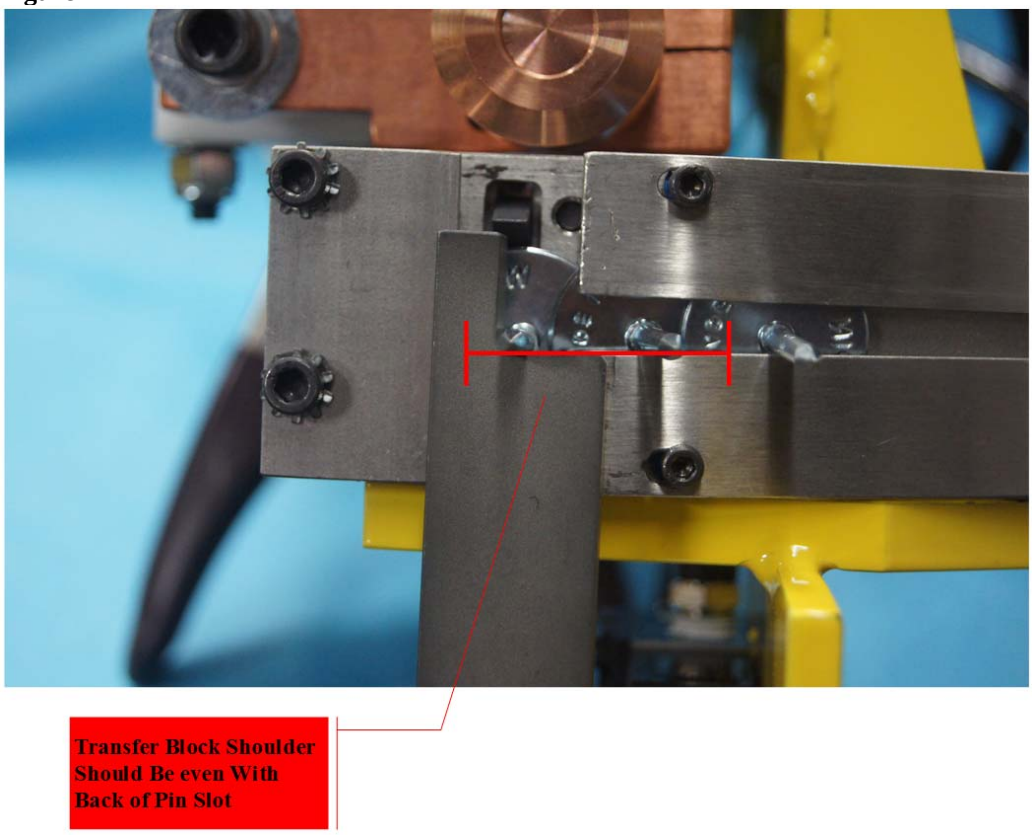


Figure 3

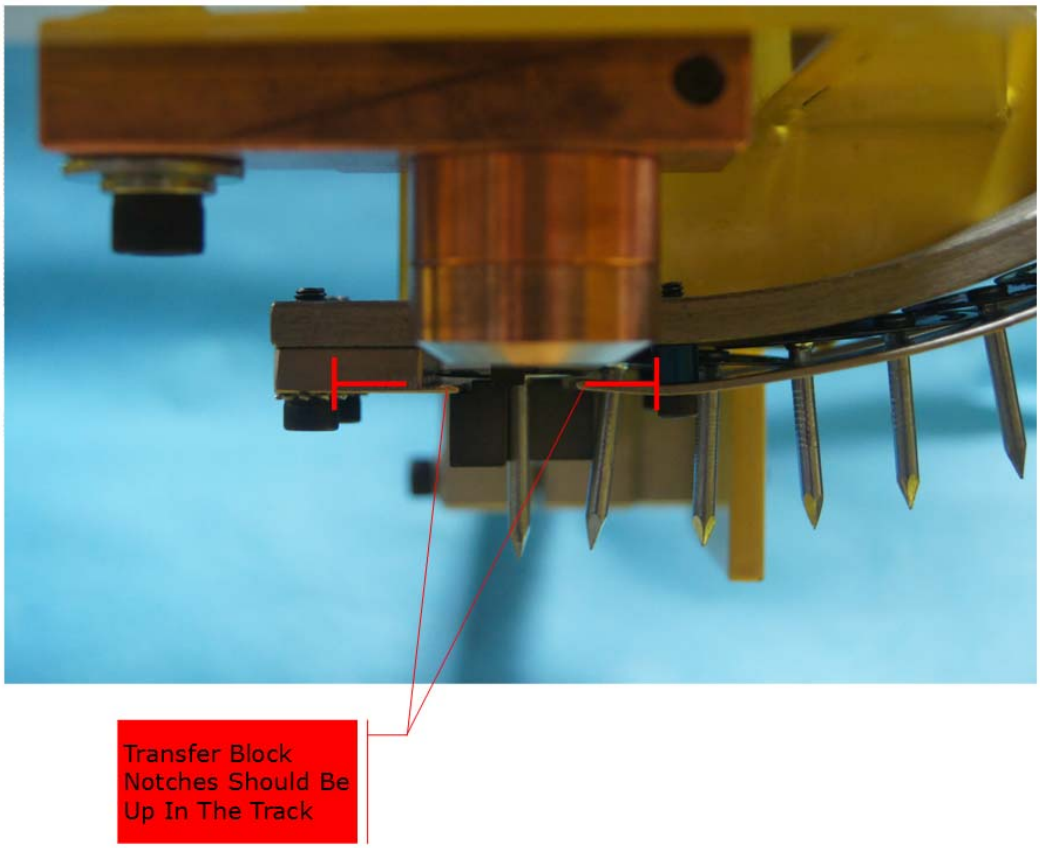


Figure 4

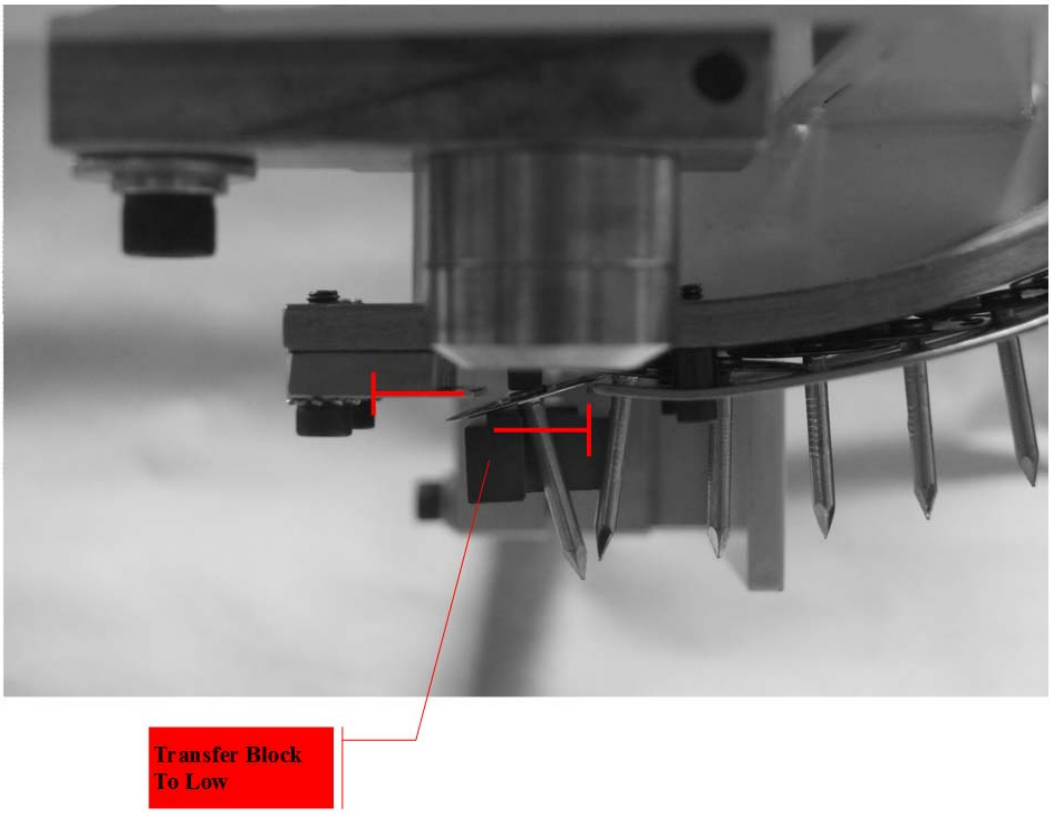


Figure 5

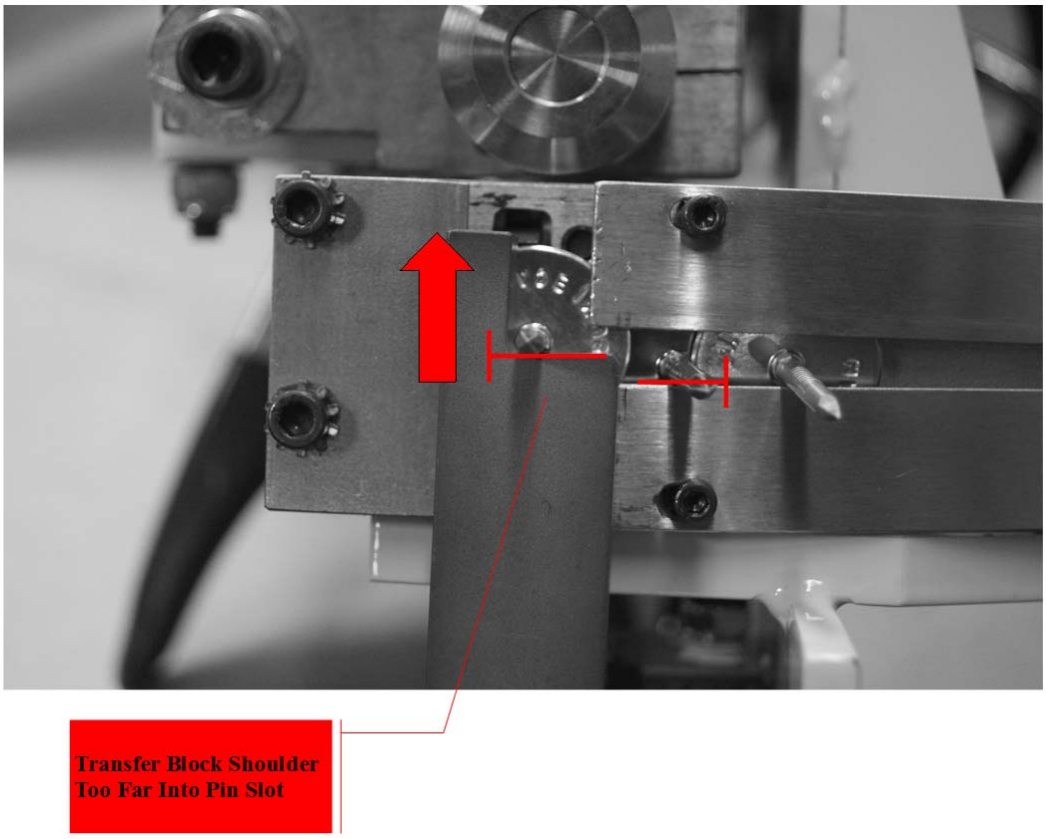
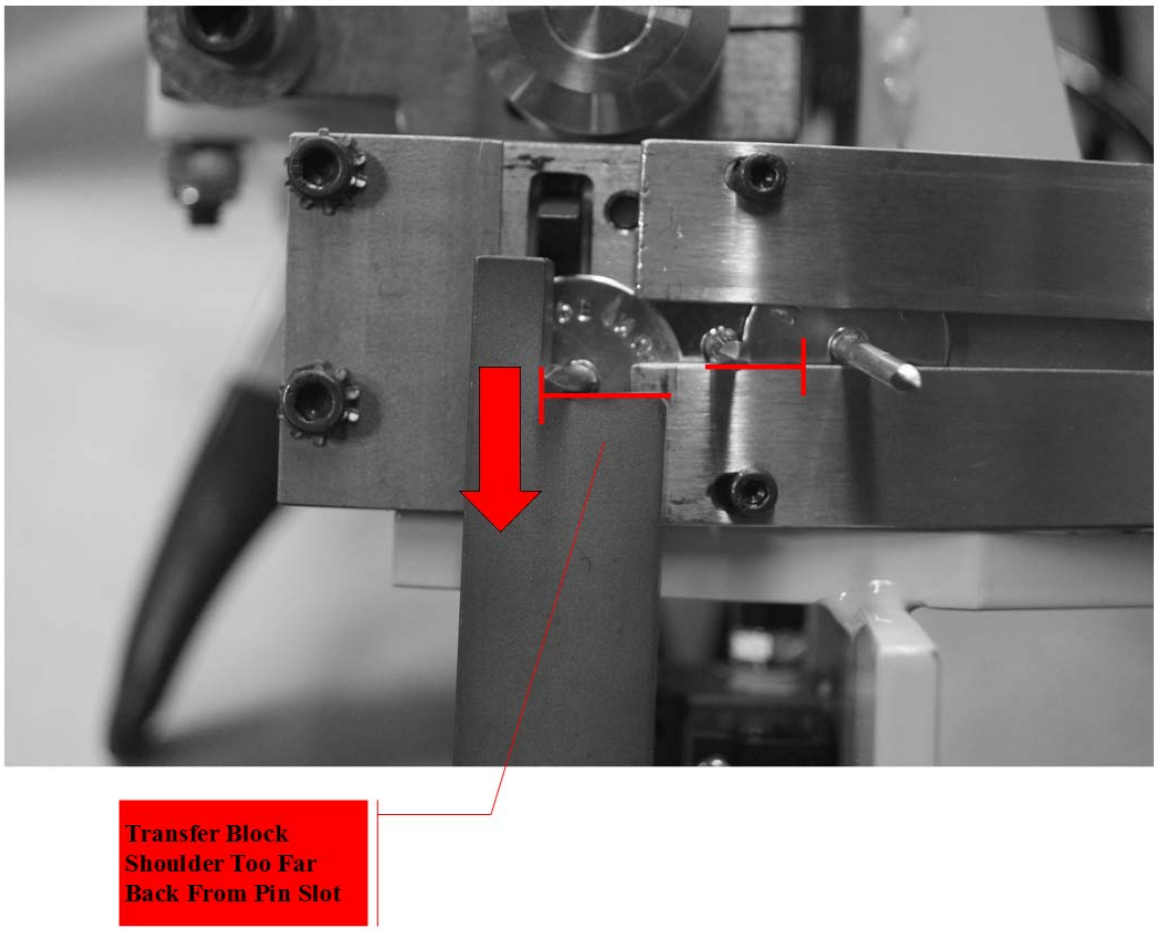


Figure 6



Replacement

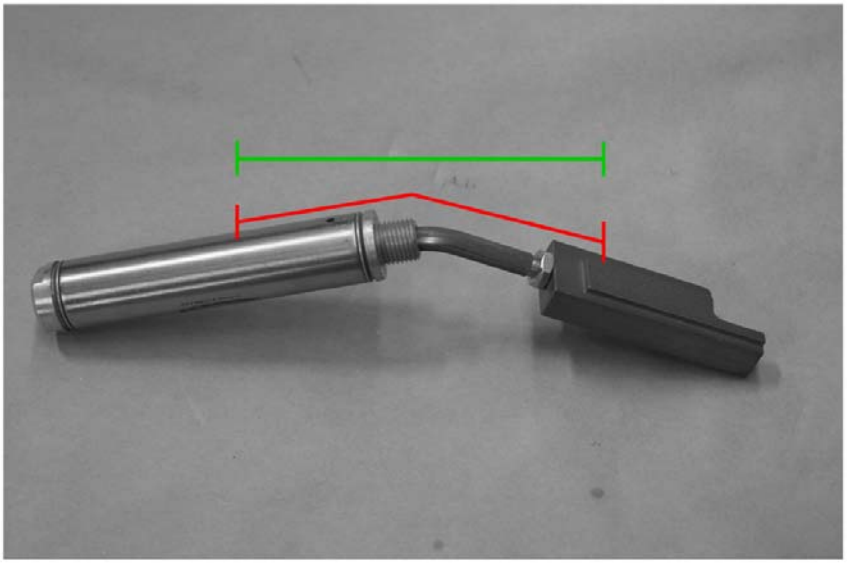
You may experience worn or damaged load cylinders (Figure 7).

NEVER try to repair or modify damaged load cylinders. **ONLY** replace with certified Gripnail factory replacement cylinders.

To replace load cylinder:

1st. Remove the two cap screws from split block that holds the load cylinder.
2nd. Remove load cylinder.
3rd. Remove transfer block, jam nut, and air fitting from damaged load cylinder.
4th. Install original transfer block, jam nut, and air fitting onto new load cylinder.
5th. Install new load cylinder into split block.
6th. Align and tighten both cap screws according to *Adjustments/Alignment* section above.

Figure 7



Maximizing Welding Proficiency

Cleaning Weld Tip (Upper & Lower)

[Refer to *General Overview of Daily Check / Maintenance* section, under the topic *Tip maintenance*, on Page 3]

- Keeping upper and lower Weld Tips clean will help with stronger welds, and will increase Weld Tip longevity.
- Upper Tips:
  - When Upper Tips get excessively worn, they may lead to welding issues or misalignment during Weld Pin feeding.
  - The head of the Weld Pin should be captured by the recess in the upper Weld Tip, as shown in (Figure 8) on an example of a new Upper Weld Tip.
  - If using a worn Upper Weld Tip (Figure 9), it may cause:
    - Misalignment
    - Folding of Weld Pins
    - Decreasing weld integrity
  - If Upper Weld Tip resembles that of (Figure 9) or experiencing any of the above issues, Gripnail suggest replacing the Upper Weld Tip.
- Lower Weld Tips:
  - Weld Pins are designed to be welded off centered on the Lower Weld Tip.
    - This design feature allows for rotation of the Lower Weld Tip before replacement is needed.
  - After extensive use, Lower Weld Tips begin to show depression points and will cause dimples on the exposed side of the ductwork (Figure 10).

Figure 8

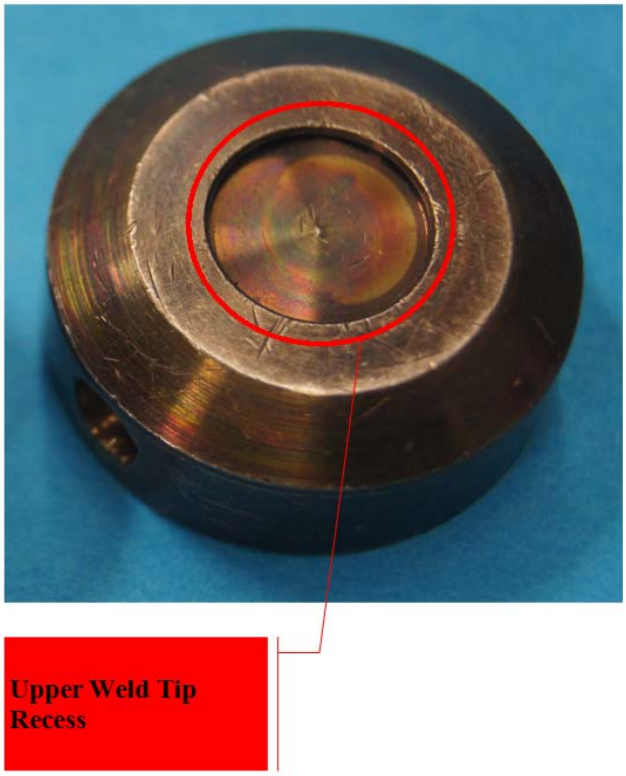


Figure 9

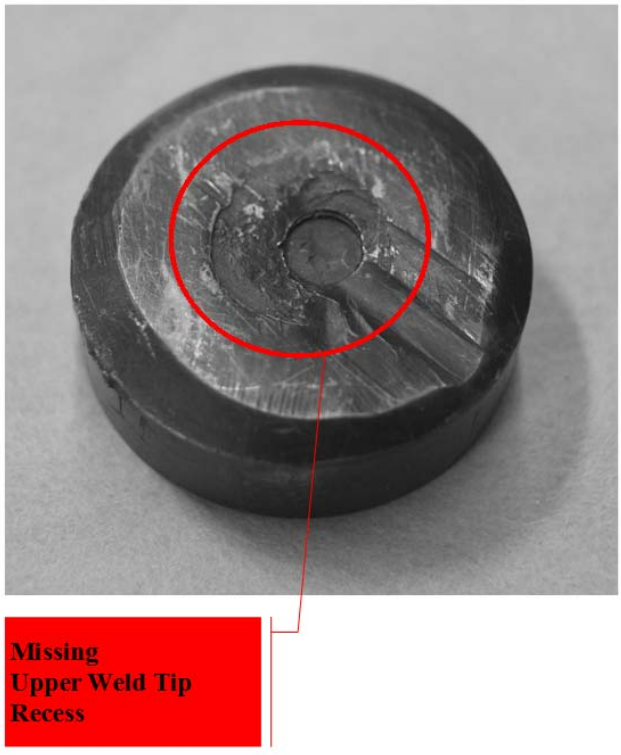
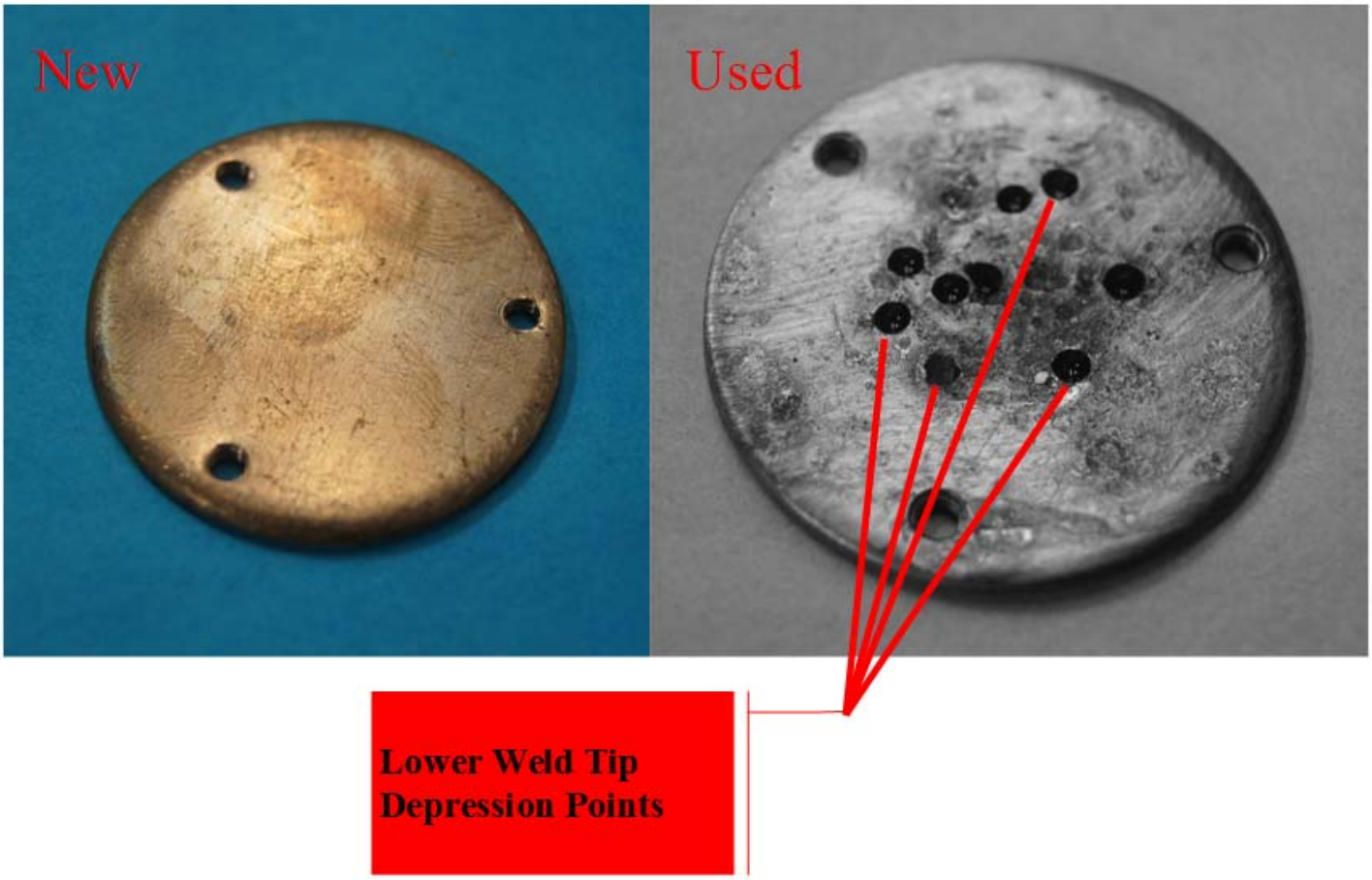


Figure 10



Changing / Adjusting Weld Tip

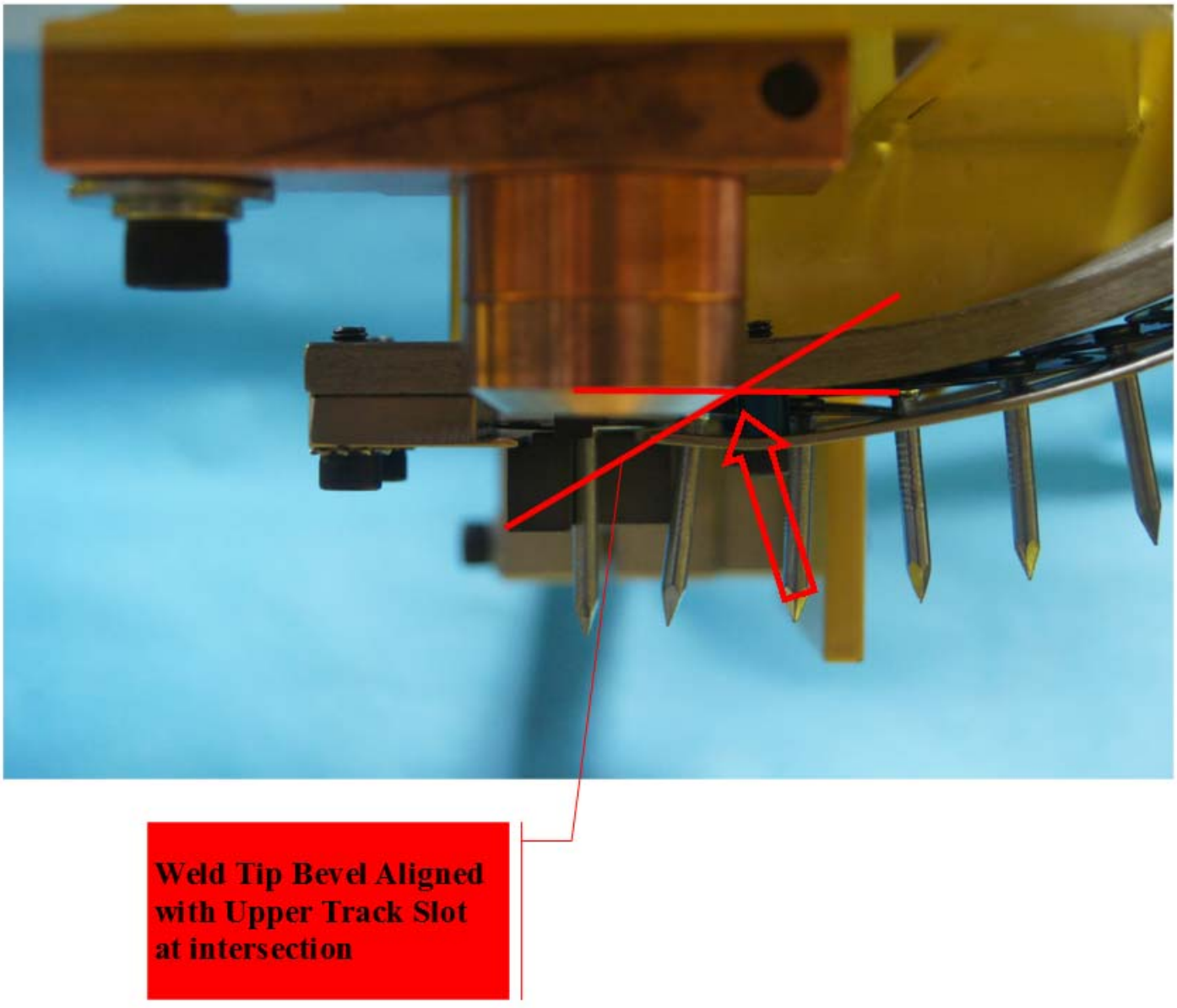
- Changing Upper Weld Tips
  - 1st. Turn Electric Disconnecter off from the PP50 Multi-head Welder
    - Allow each head to lower for easier access to the Weld Tips
  - 2nd. Using the provided spanner wrench, insert into Weld Tip hole
    - Located on the side of the Weld Tip
  - 3rd. Unscrew Weld Tip from the weld tip holder
  - 4th. Replace used Weld Tip with Gripnail factory replacement
  - 5th. Screw Weld Tip back into place
  - 6th. Using the provided spanner wrench, tighten Weld Tip

- Changing Lower Weld Tips
  - 1st. Loosen jam nut on electrode stem
  - 2nd. Unscrew lower Weld Tip holder
  - 3rd. Remove the three mounting screws from underneath the Weld Tip holder
  - 4th. Replace Weld Tip and three mounting screws
  - 5th. Place Weld Tip holder back onto electrode stem
  - 6th. Adjust lower Weld Tip height by placing a straight edge across drive belts
  - 7th. Adjust Weld Tip holders until they barely touch the straight edge
  - 8th. Tighten jam nut to Weld Tip holder

Drive Cylinder / Upper Weld Tip

- Adjustment to the Upper Weld Tip can be made by disconnecting the air and electricity, then, letting the drive cylinder fall so that the jam nut on top of the insulator block can be easily loosened.
- Cylinder shaft can then be turned to either raise or lower Upper Weld Tip.
- Weld Tip should be adjusted so that the upper bevel on the Weld Tip is even with the top slot of the pin track (Figure 11).
    - If Weld Tip is too high, the magnet will not be able to grab the Weld Pin fast enough and cause over feeding issues.
    - If Weld Tip is too low, the Weld Pin caps will jam into the back of the Upper Weld Tip causing bent Weld Pin caps and jams.

Figure 11



Upper Track Alignment

Vertical Gap Alignment

- Alignment gap between the Upper and Lower Tracks are measured and set at the Gripnail factory to be $\frac{3}{32}$ inches (Figure 12).
- If a Weld Pin jams between the Upper and Lower Track it may result in either of the Tracks to bend.
    - This will call for a realignment or even a replacement of the Tracks.
    - If realignment is needed, it is imperative reset gap to $\frac{3}{32}$ inches leave only ± 0.01 inches from the factory standard between Upper and Lower Tracks (Figure 13).

Horizontal Track Alignment

- It may be necessary to move drive head bracket and track to either the left or right for varying Weld Pin placement.
    - To move drive head bracket, loosen the two cap screws that hold the drive head bracket to the carriage.
    - Adjust to desired Weld Pin placement, then tighten.
- When drive head bracket is aligned, it is necessary to align Upper Feeder Base and Track with the Lower Track (Figure 14).
    - This is done by loosening the bolt with a $\frac{15}{16}$ wrench under the Feeder Base.
    - Align Upper and Lower Tracks.
    - Tighten bolt with a $\frac{15}{16}$ wrench.
        - It is imperative to align Upper and Lower Tracks horizontally to insure best Weld Pin feed.
        - Any misalignment will cause Weld Pin Caps to jam between Upper and Lower Tracks (Figure 15).
        - After making adjustment, also check Vertical Gap Alignment because gap may move do to Lower Drive Head Bracket adjustments (Refer to *Vertical Gap Alignment* section above for proper Vertical Gap Alignment procedures).

Figure 12

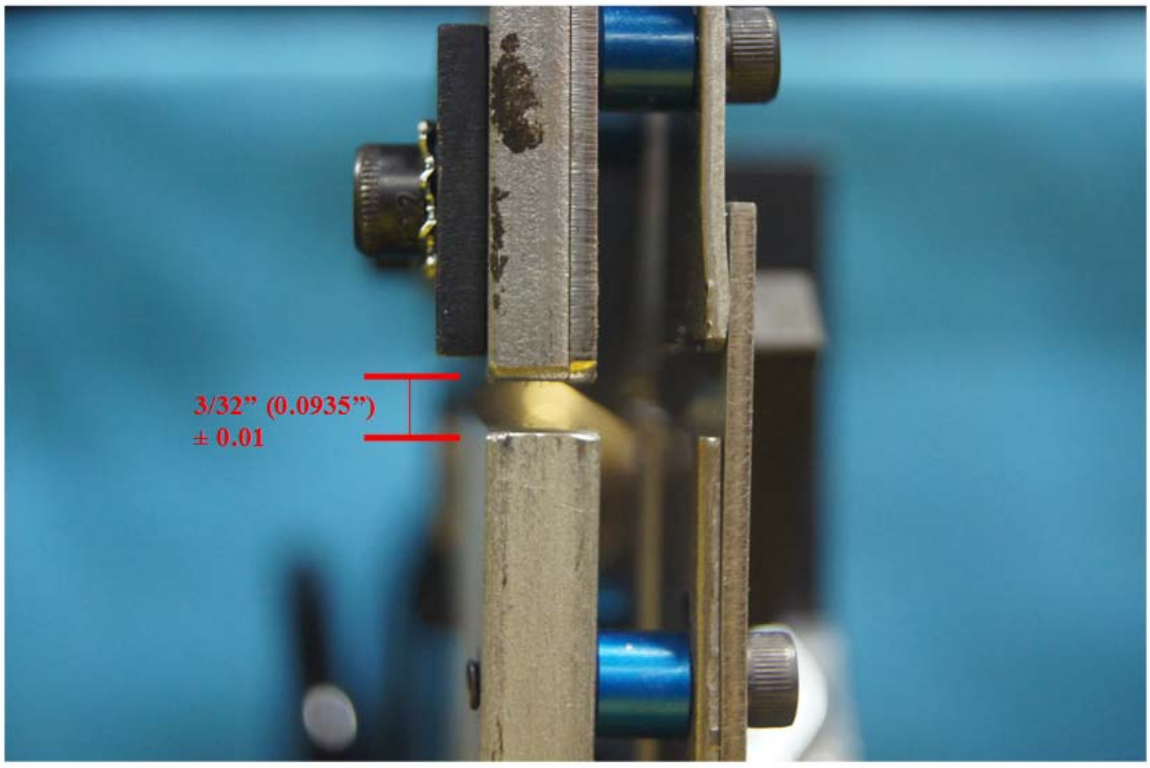


Figure 13

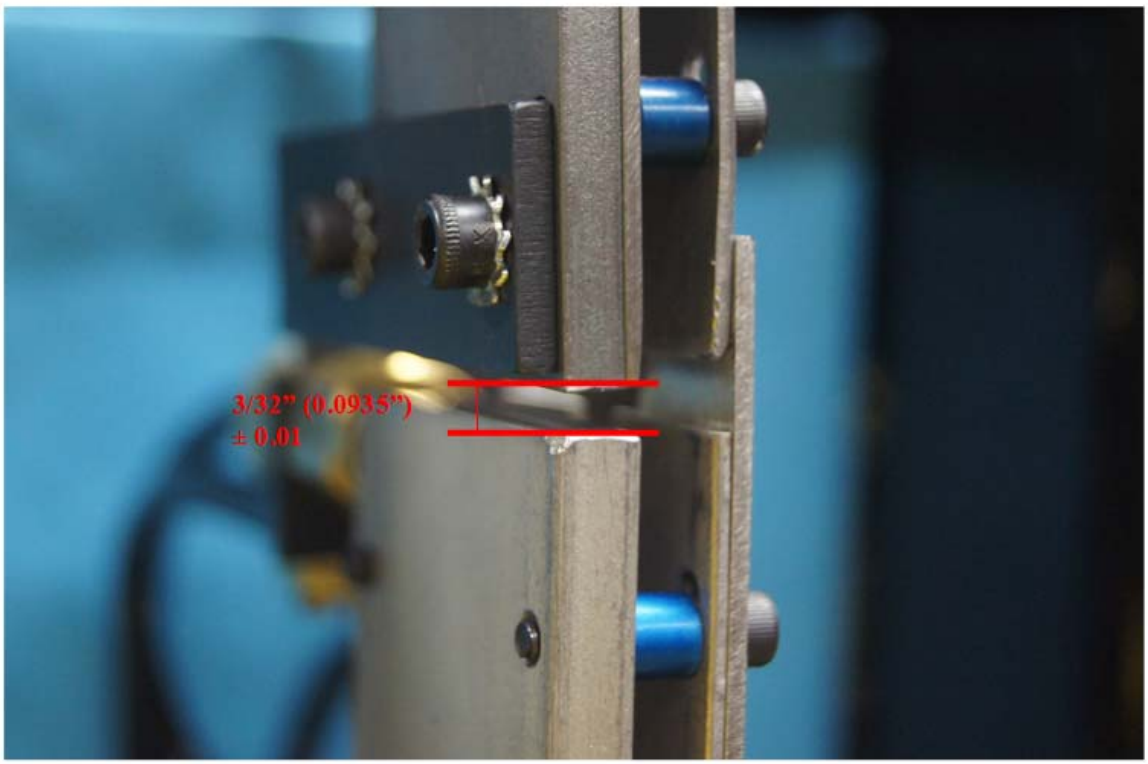


Figure 14

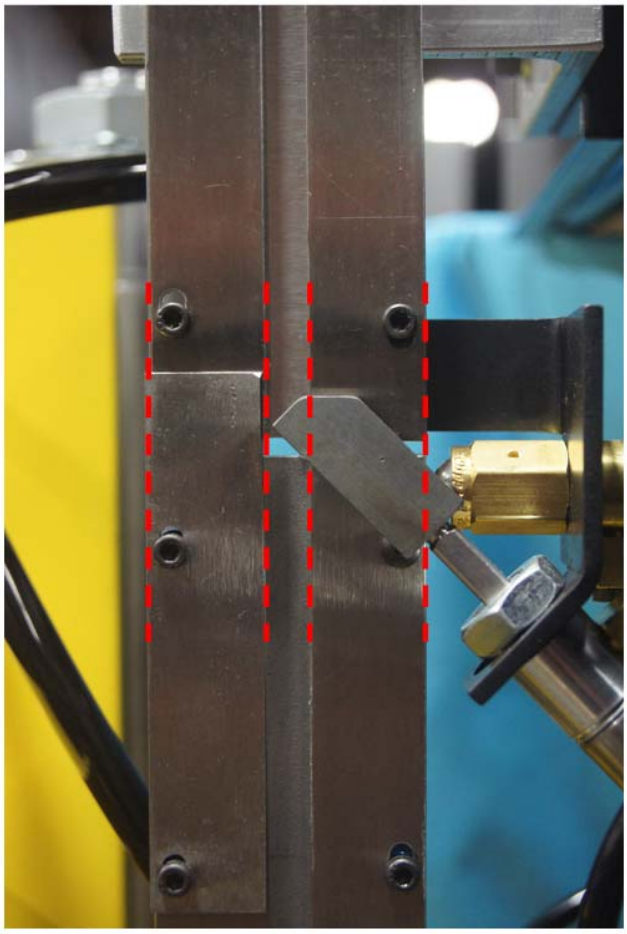
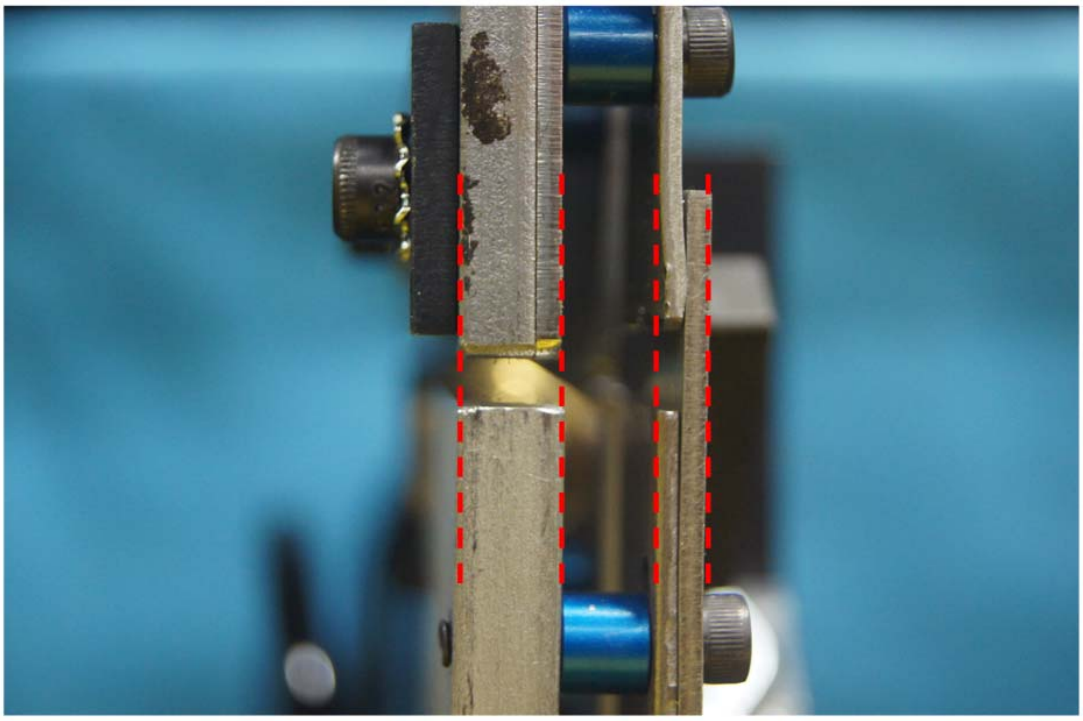


Figure 15



Question & Answer

NOTES: