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Title	Senior Operations Training Coordinator	

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1.0 PURPOSE

1.1. The purpose of the document is to define the SOP (Standard Operating Procedures) to be followed by ADVANEX EUROPE Ltd, in order to ensure that the Whitelegg Hit-8 and Hit-16 5 Axis Machines are operated in a systematic and uniform manner.

2.0 SCOPE

2.1. This document applies to the assembly of parts, start up and adjustment procedure for the Whitelegg Hit-8 and Hit-16 5 Axis Machines, including the probe gauge and decoiler.

3.0 TERMS, DEFINITIONS & ABBREVIATIONS

3.1. N/A

4.0 HEALTH, SAFETY & ENVIRONMENTAL

4.1. Within the factory area safety footwear is mandatory.

4.2. Within the factory area safety glasses must be worn.

4.3. Ear defenders must be worn in the designated areas of the factory.

4.4. Basket and bin weights must not exceed 12kg

4.5. Guards and interlocks need to be in place when the machine is in operation.

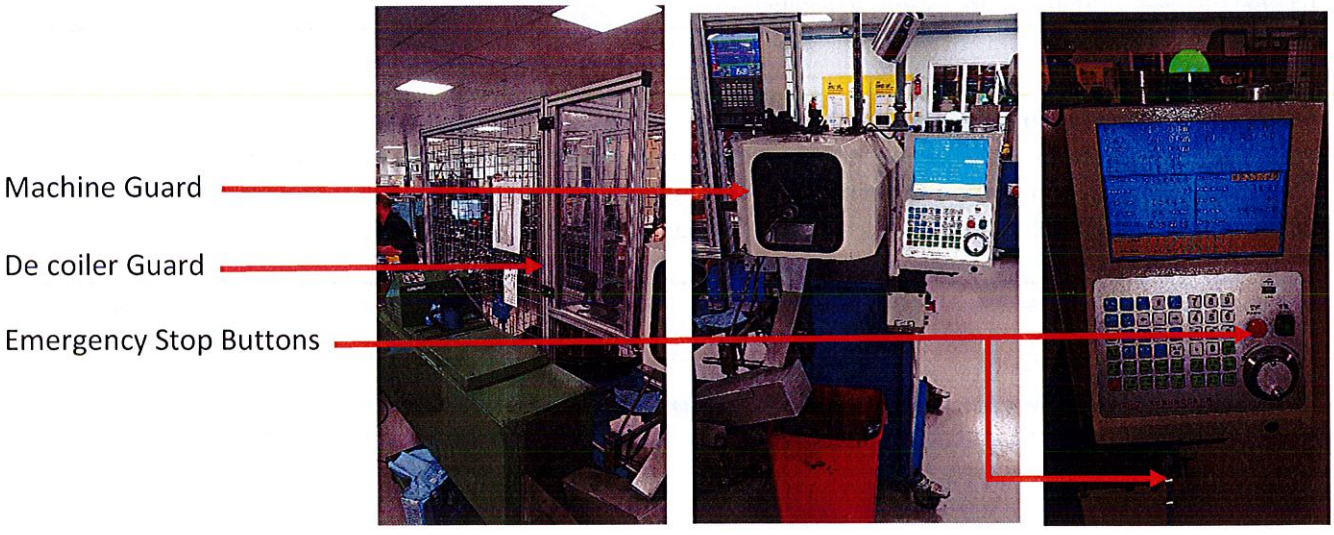

Figure 1: Machine Guards and Emergency Stops

5.0 ASSOCIATED DOCUMENTS

5.1. Operator Booking Procedure (Document Number AEU00469).

5.2. Works Order Instructions: Allowing full traceability for the batch.

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6.0 PROCEDURE

6.1. Start De Coiler. Figure 2 shows the Decoiler control panel (DCP) and a description of the commonly used controls.

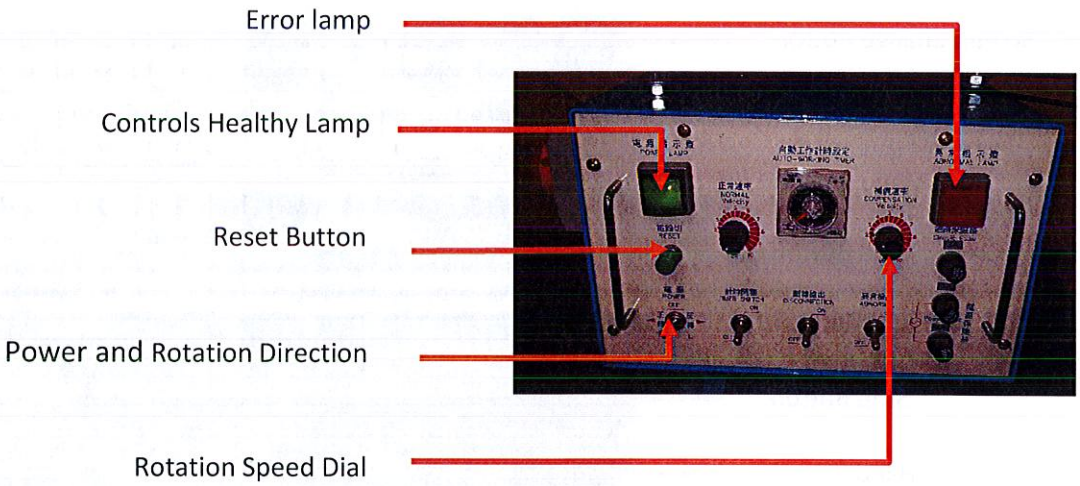

Figure 2: Decoiler Control Panel

- Flick the power and rotation direction switch to power up and set the direction of rotation
- At this point an alarm light and buzz will activate
- Press the reset button to disarm the alarm light and buzz.

6.2. Start Machine.

- Grab The power Switch (Emergency Stop Button)
- Turn the switch according to the arrow direction (clockwise rotation)
- The switch will jump out
- Press the green start up button to start the machine

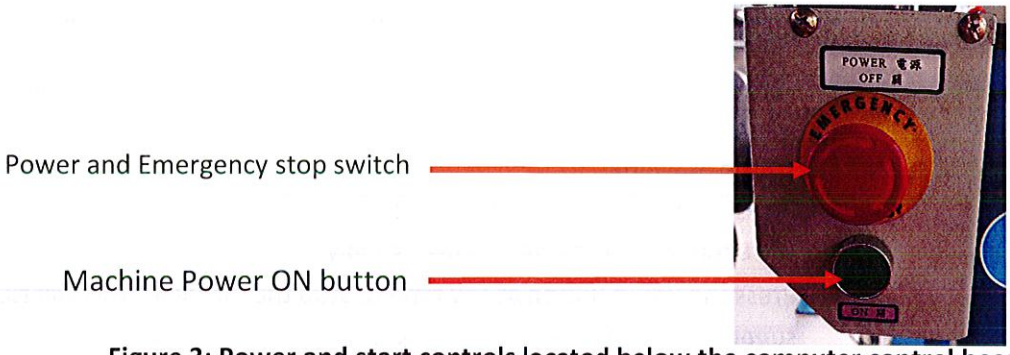

Figure 3: Power and start controls located below the computer control board

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6.3. Highlighted in figure 4 are the controls required to operate the machine to produce a spring when the component is already set up.

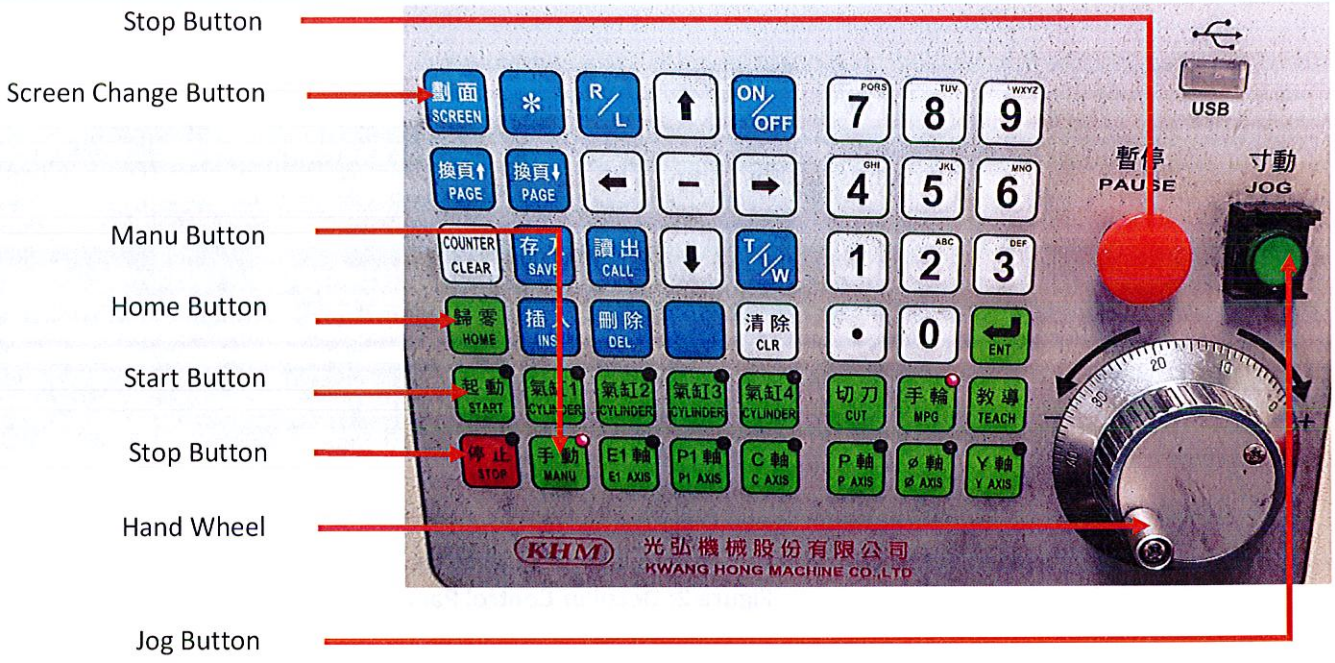

Figure 4: Computer Control Board

6.4. Running Procedure

- Press the Home button to return all axis to zero position
- Press the Manu Button
- Turn the Handle wheel clockwise, check the production process of the adjusting spring on the machine, until cut off.
- To jog the machine over on power, close the guards and press the Jog Button to produce some components.
- To continuously run the machine, ensure guards are closed and press the Start Button. The machine will continually run until you stop it.

6.5. Shut Down the Machine

- Press the Power and Emergency Stop Switch (Figure 3) to stop the machine at any point. This **WILL** turn off the machine power supply.
- Press the Pause Button at any time to stop the machine. This will **NOT** turn the machine power supply off. To resume operation, press the Home Button to Zero position and follow step 6.4.
- Press the Stop Button at any time, this will make one more part, cut off then stop. To resume operation, press start.

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6.6. Set up of Length Gauge Probe

- Wind the machine over until the green **Read In** light, lights up. Normally just before the part is cut.
- Set the probe square to the end of the spring and set the micrometer head to zero.
- Press the **Esc** button
- Use arrow keys to highlight **Parameter** and Press **Enter**
- Highlight **Probe Setup** and Press **Enter**
- Highlight **Unit Scale** and Press **Enter**
- Enter Figure using the keypad (normally a quarter of the Tolerance) then press **Enter**
- Highlight **ADJ Zero** Press **Enter**
- Turn the **ADJ. BAL.** to make the figure read 0.00 then Press **Enter**

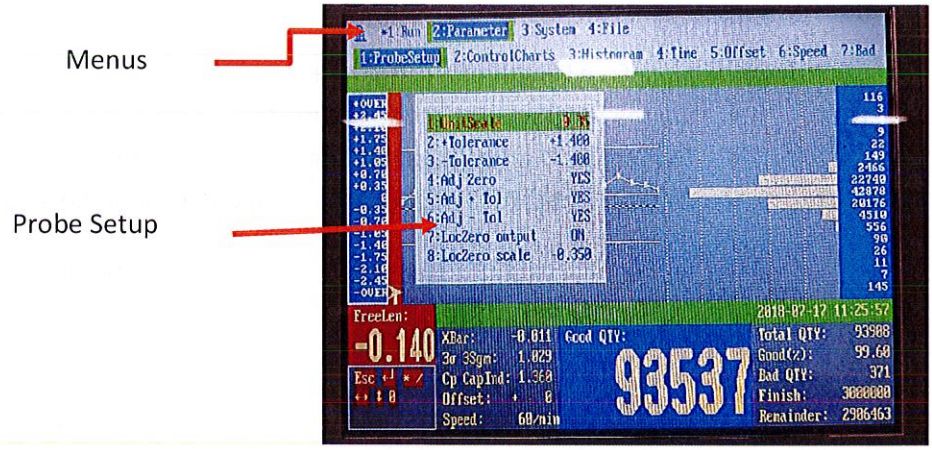

Figure 5: Shows the display for the Probe settings

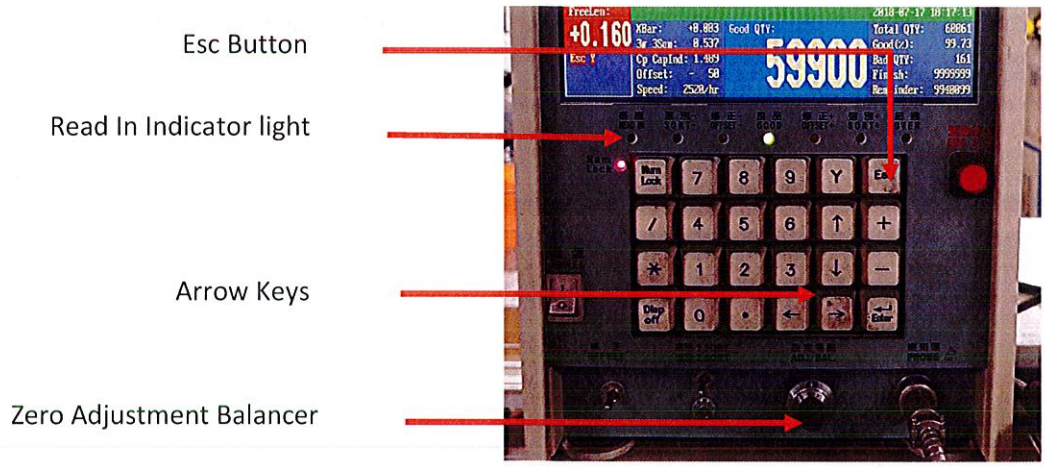

Figure 6: Shows the controls for setting the probe

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- Highlight **ADJ. + Tol.** Press **Enter**
- Turn probe head clockwise to the desired upper tolerance and then press **Enter**
- Return the probe head to zero (turning anticlockwise)
- Highlight **ADJ. - Tol.** Press **Enter**
- Turn probe head anticlockwise to the desired lower tolerance and then press **Enter**
- Return the probe head to zero (turning clockwise)
- Press * on the controls to return to Run and then press **Enter**
- Now the probe is set and ready to adjust the spring length to the tolerances set.

6.7. Adjusting the Free Length of a component.

- **Via the length gauge probe (figure 7)**
- To increase the free length of the component wind the adjustment screw anticlockwise.
- To shorten the free length of the component wind the adjustment screw clockwise.

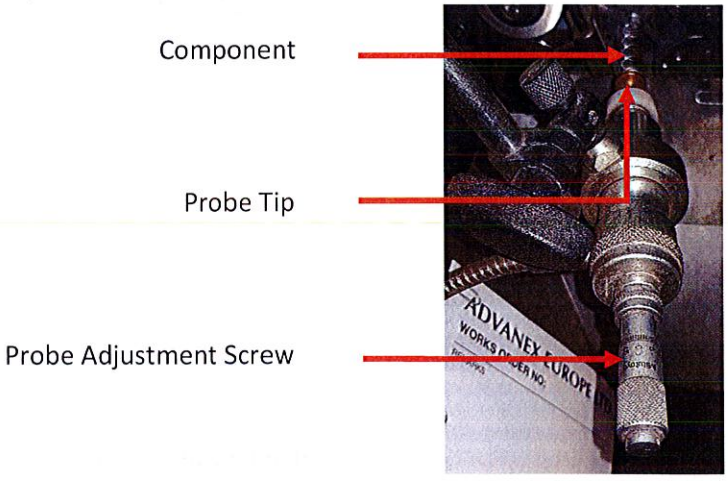

Figure 7. Free length gauge probe

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- **Via the Program Editing Screen**
- Press the screen change button (Figure 4) until you find the program editing screen
- Increase the Pitch value to increase the part length (Figure 8)
- Decrease the Pitch value to shorten the part length.
- Pitch Values will be entered in either P or P1 column depending on which pitch tool is being used

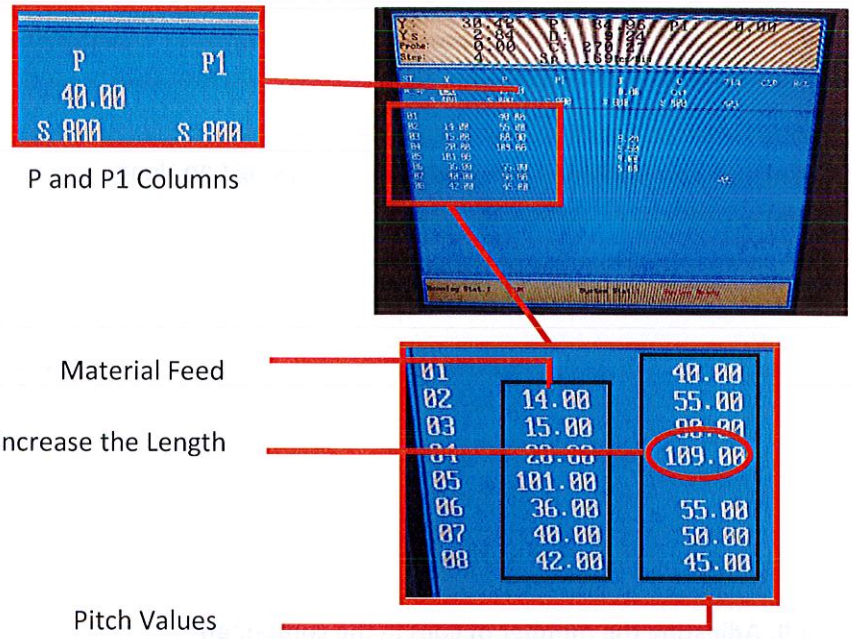

Figure 8: Program Editing Page

6.8. Adjusting the outside diameter of a component.

- **Via the Program Editing Screen**
- The diameter is changed in the 'D' Column shown in Figure 9.
- Increase or decrease the values here to change the diameter size at different points on the spring

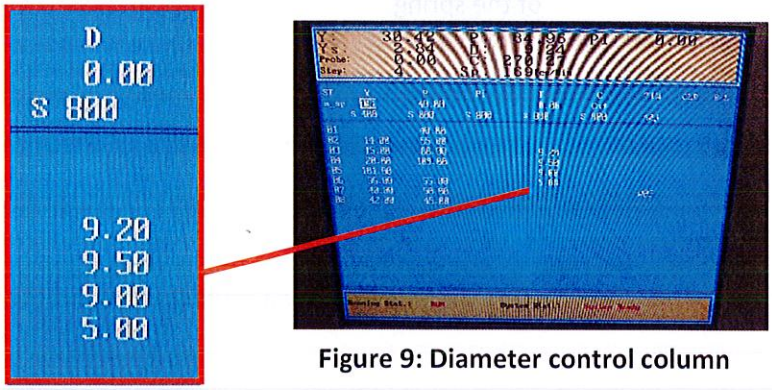

Figure 9: Diameter control column

- **Manually changing via the machine settings**
- Undo locking cap head

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- Wind the adjustment screw clockwise to make the diameter smaller
- Wind the adjustment screw anticlockwise to make the diameter bigger
- When adjustment is made tighten up the locking cap head.

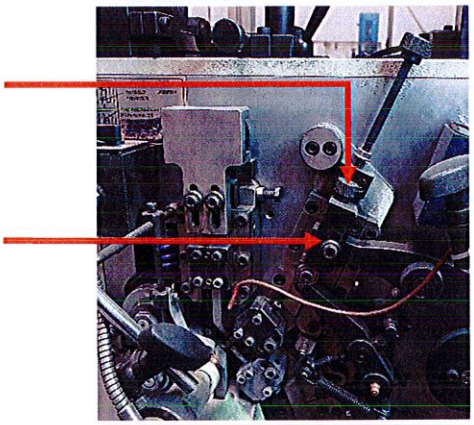

Figure 10: Machine Face, Diameter Adjustment

6.9. Adjusting the number of coils in the component.

- On the 'Y' column on the program editing page you can alter the amount of material to be fed in.
- Referring to the example in figure 11. Row 5 shows the main wire feed to control the coils in the component. **(Not always row 5 for the main wire feed)**
- Reduce or increase this value to remove or add coils
- Altering the wire feed on the other rows will affect the coil amount but will also affect the ends of the spring.

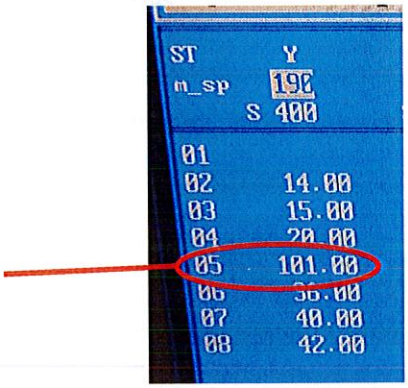

Figure 11: Wire feed inputs to alter coils in component.

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6.10. Adjusting the Mandrel position

- Fit the mandrel from the inside of the machine and lock in place using the locking handle. Figure 12 and 13.

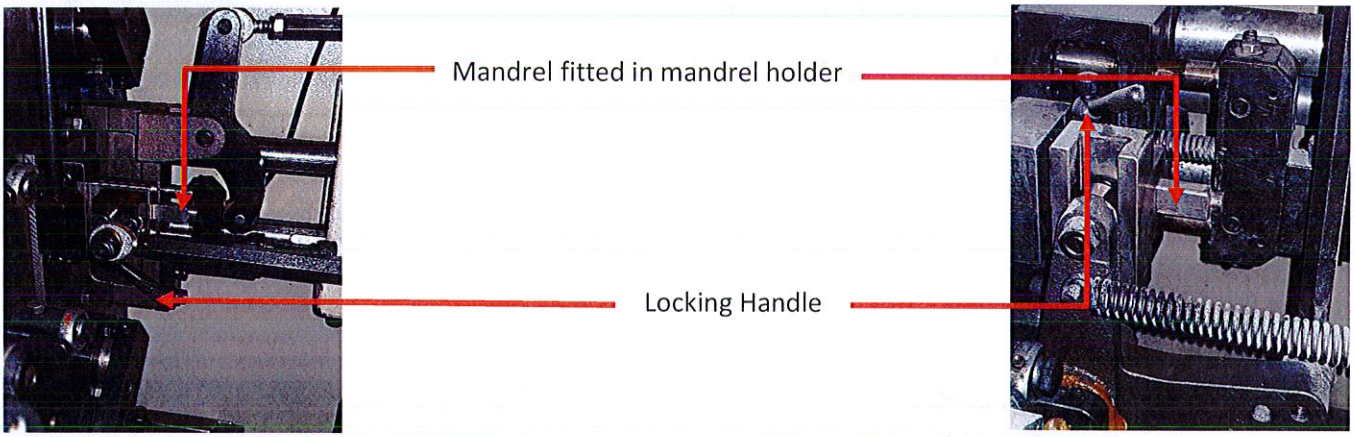

Figure 12: Inside the back of the HIT 8 Machine

Figure 13: Inside the back of the HIT 16 Machine

- Adjust the mandrel up and down via the handle on the top of the machine and lock using the locking handle. Figure 14 and 15.
- Adjusting the mandrel in and out, is slightly different on each machine. Both controls are on top of the machine. Hit-8; is locked and un locked via handle and adjusted with knurled end located at the front face of the machine. Hit-16; has a double knurled head, one locks and unlocks while the other adjusts the mandrel. Figure 14 and 15.

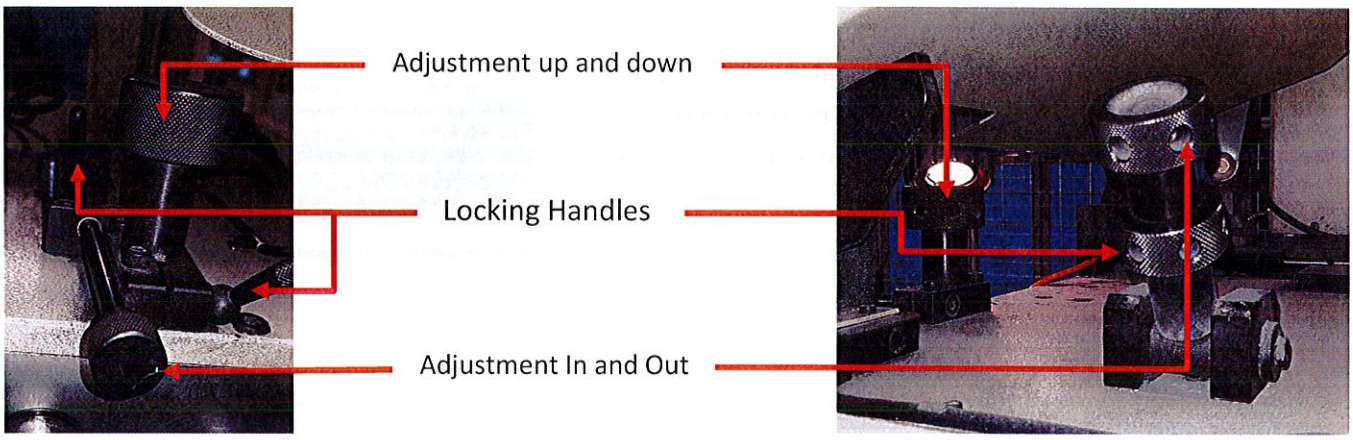

Figure 14: Adjustment on the HIT 8 Machine

Figure 15: Adjustment on the HIT 16 Machine

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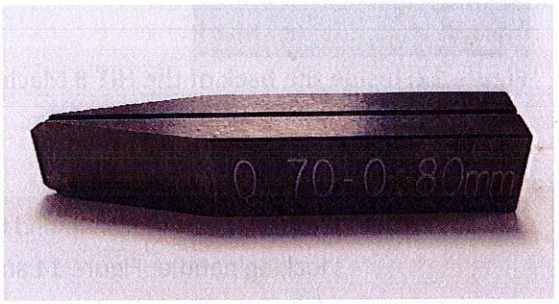
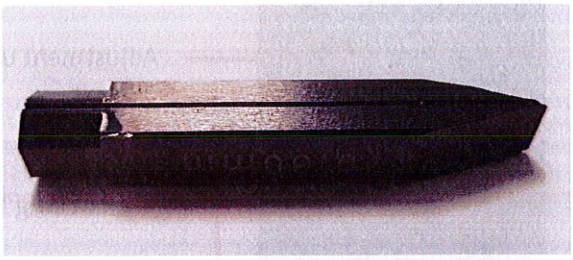
6.11. Parts for Installation

- **Feed Rollers**
- Range from 0.10mm – 0.80mm on the HIT 8
- Range from 0.7mm – 1.6mm on the HIT 16
- The bottom roller is grooved, and the top roller is **Flat** on the HIT 8
- Both Rollers are grooved on the HIT 16

- **Inlet Wire Guides**
- Range from 0.15 - 0.80mm on the HIT 8
- Range from 0.7mm – 1.6mm on the HIT 16
- Held in with a cover plate and two cap heads



- **Exit Wire Guides**
- Range from 0.15 - 0.80mm on the HIT 8
- Range from 0.7mm – 1.6mm on the HIT 16
- Held in with a cover plate and two cap head



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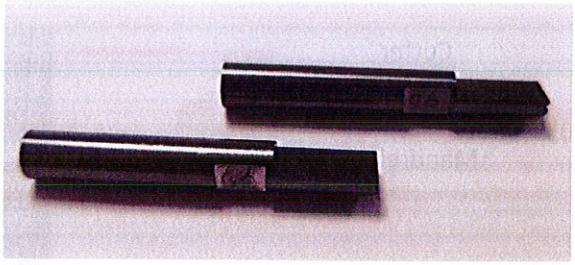
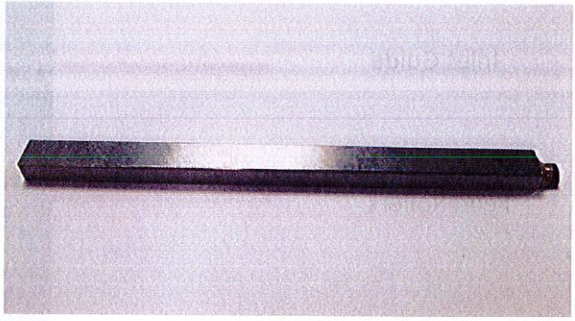
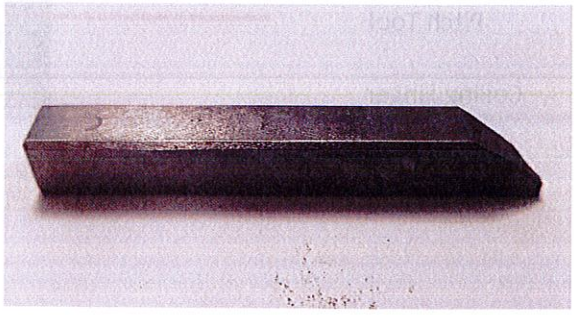
- **Coiling Fingers**
- Range from 0.15 – 0.8mm on the HIT 8
- Range from 0.7mm – 1.6mm on the HIT 16



- **Mandrel**
- Range from 2-8mm on the HIT 8
- held in vis a swivel lock inside the machine



- **Cutter**
- They come in a solid block
- Grind end to suit part being produced



- **Pitch Tool**
- Come in two sizes 30^{o} and 45^{o} angles

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6.12. Figure 16 shows the machine face with a description of where the parts should be installed.

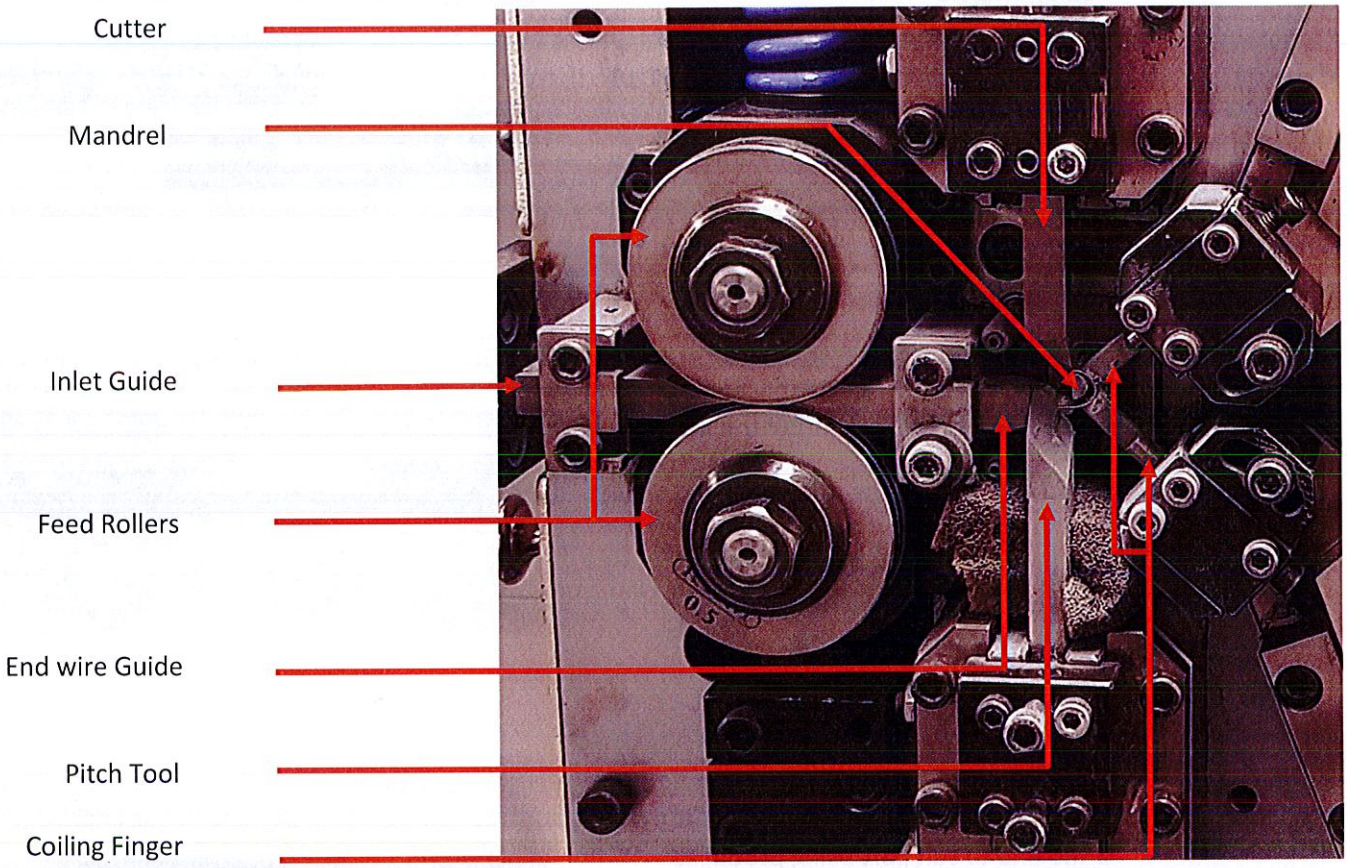

Figure 16: Machine Face of installed parts