

AL-2e - 2017

SET UP AND PROGRAMMING

JAN 2018 V.2



Overview of the tool box talk

- Health and Safety
- Layout of the machine
- Controls
- Linear encoder
- Light sensor
- Tooling
- E-stop

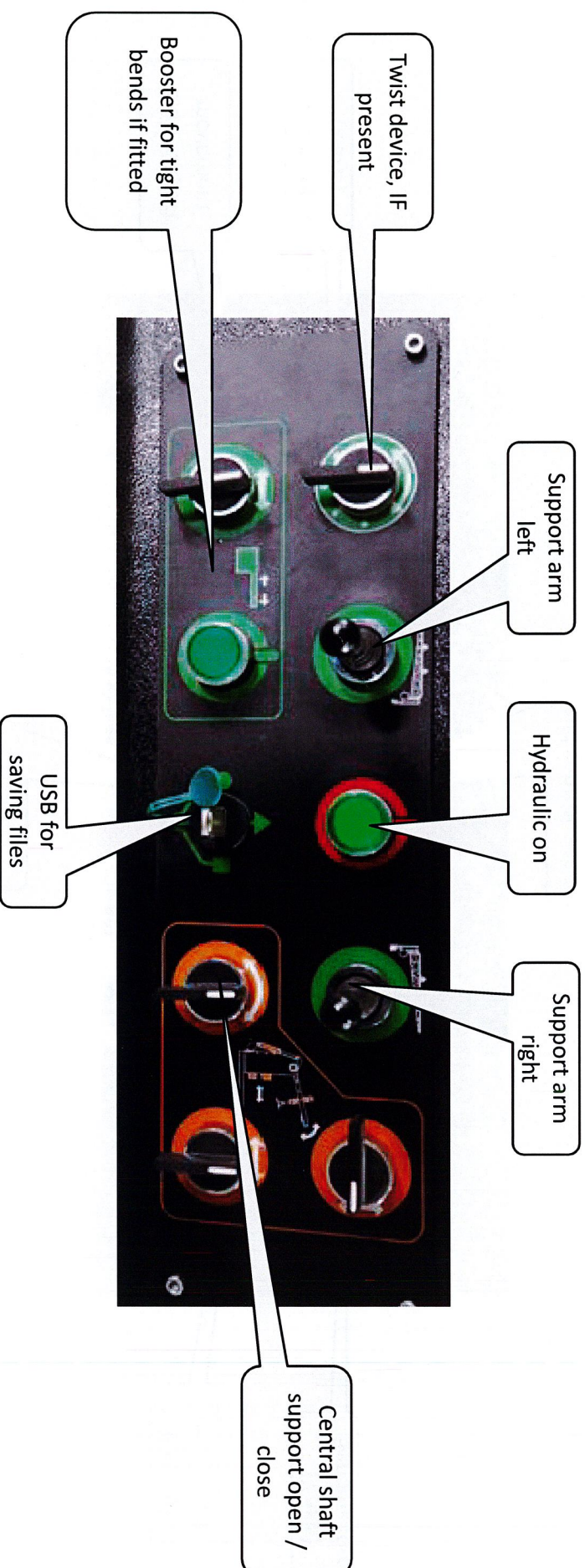
Health and Safety

- No gloves
- Trapping risk with rolls
- Trapping risk with side supports
- No hanging / dangling items
- Pedestrians
- 400 / 480v machine, locked guards

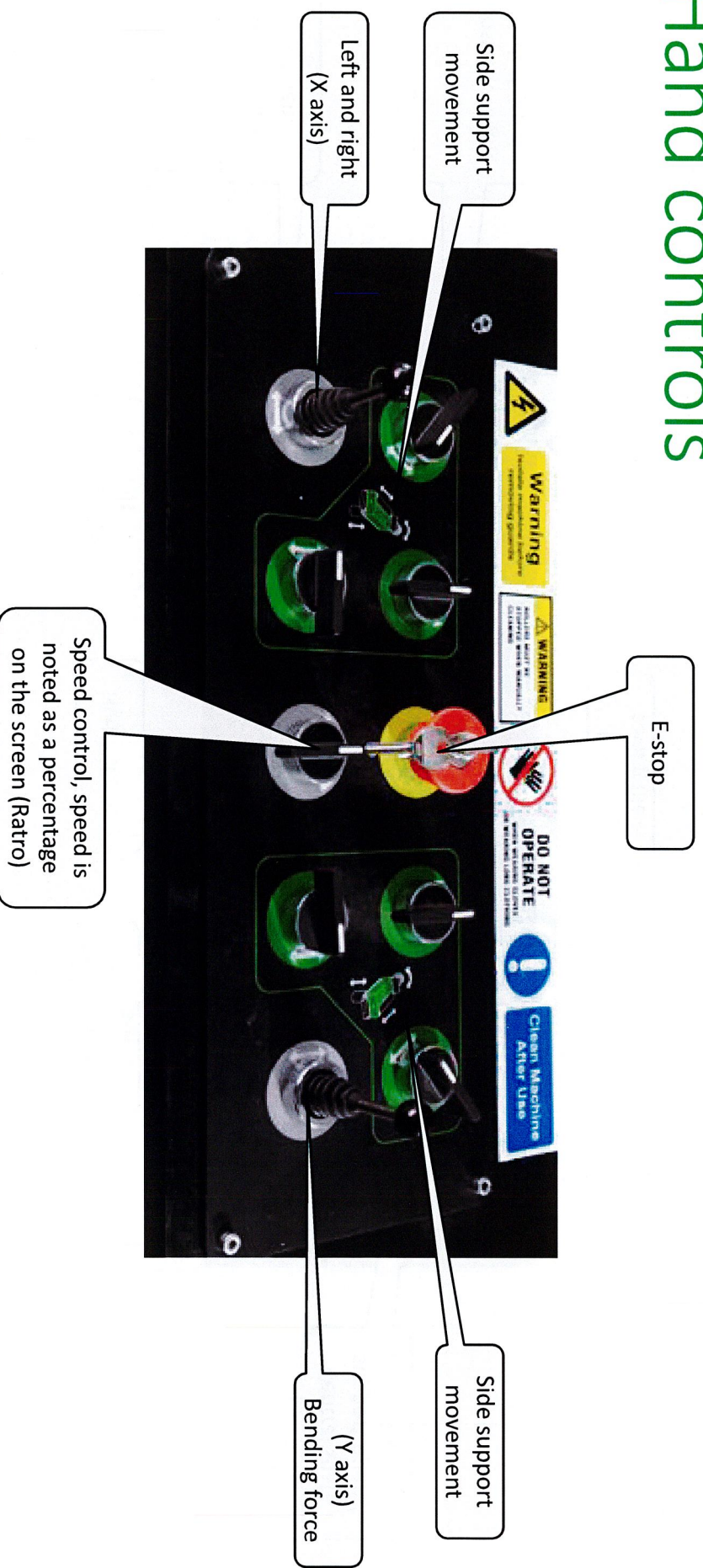
Overview of the machine and devices

- Controls
- Measuring gauge
- Light sensor
- Rolls to hold profile
- E-stop

Hand controls

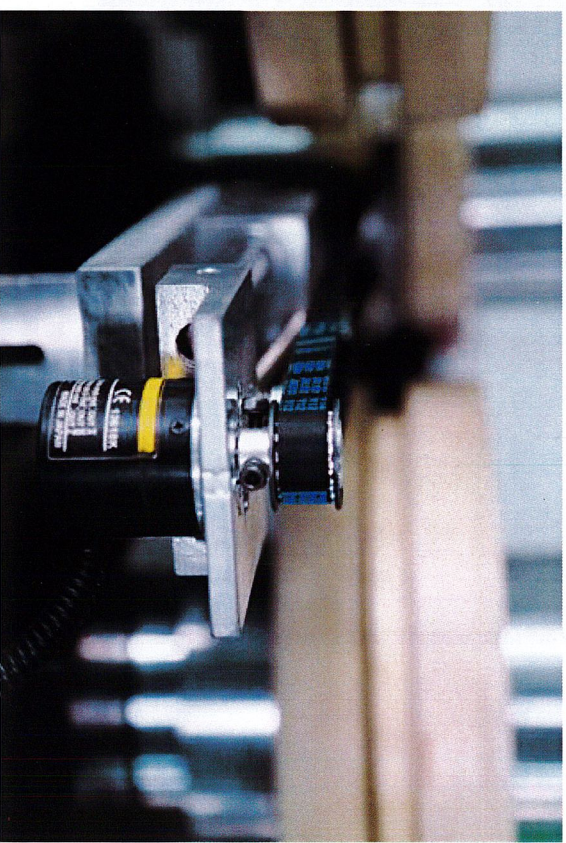


Hand controls



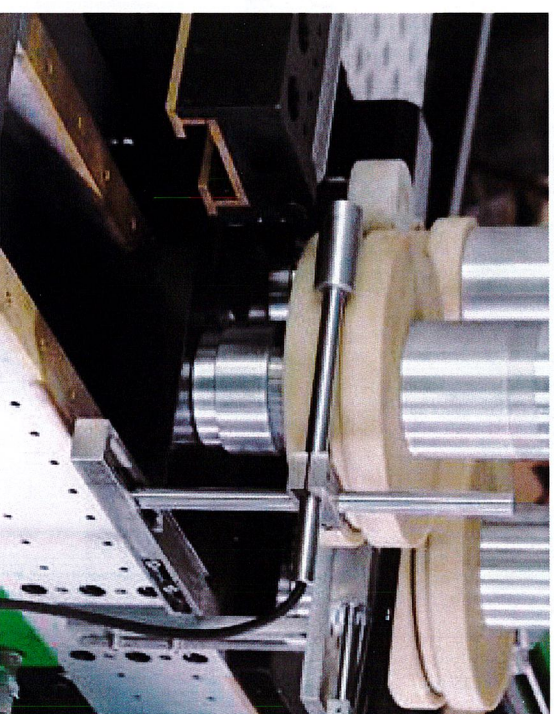
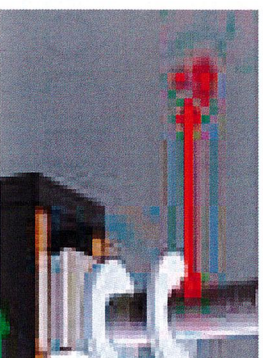
Encoder for part length

- Wheel touches the bar
- Ensure it freely moves
- Ensure there is a range of movement
- Move to the optimum position with the linear guide
- Accurate and reliable



Material sensor

- Detects the end of the part or a position
- Measures to a distance of 30mm or 1 $\frac{1}{4}$ "
- The location is entered in the HMI, see IR logo.
- Point is measured to the centre of the reader.
- If the 'zero' position



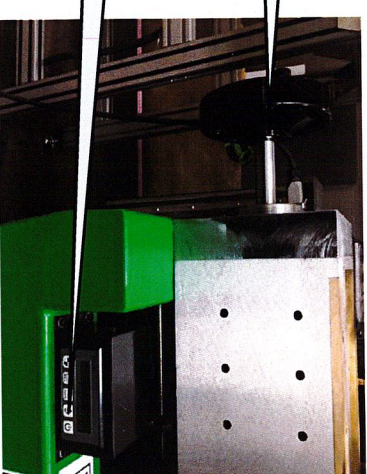
Shaft centres

- See guide for suggested centres
- Minimum 4 times the plan width for large sections.
- Centres depend on the shape, wider gives less crushing.
- Wider centres use more material.
- If there are tangents longer can be used without cost.

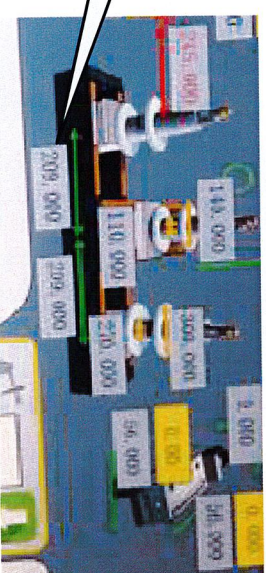
Loosen the locking wedge



Move the shafts



Position



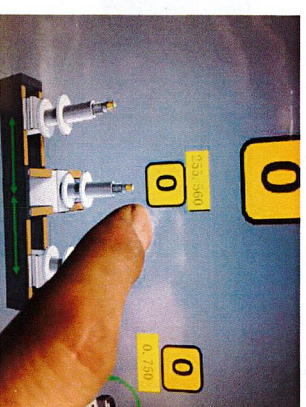
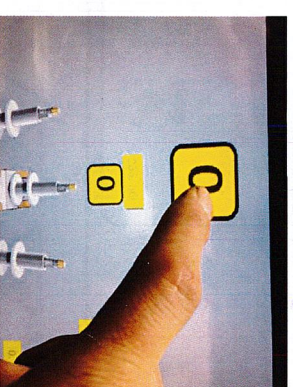
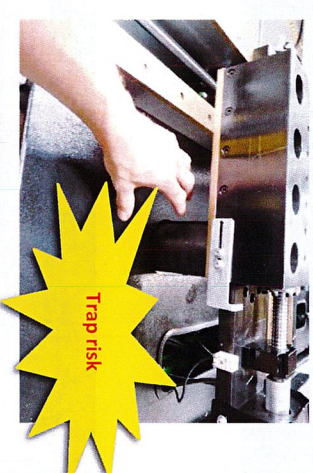
Input the position

Start up

- Turn on the isolator
- Select – ‘English’ and ‘into’
- Enter the password – 55378008 and enter
- Ensure the machine top is clear and clean

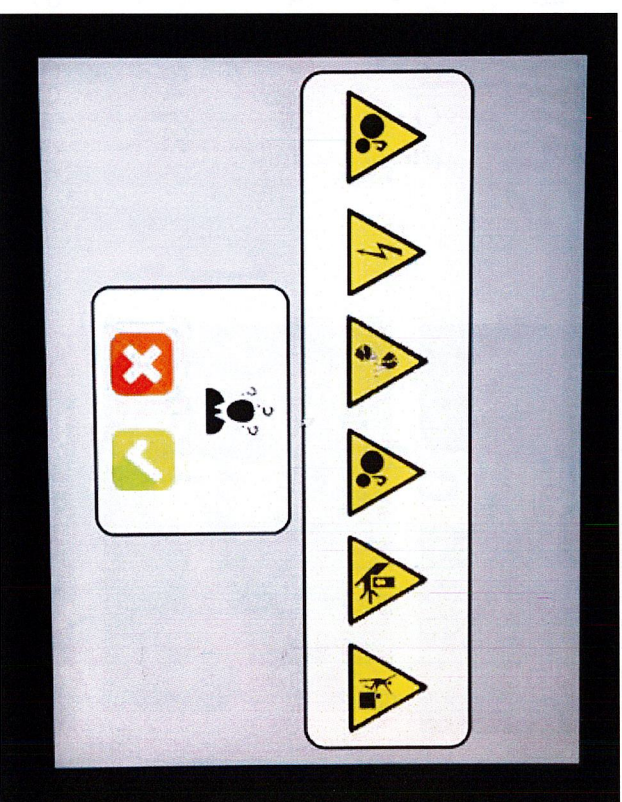
Calibration

- Ensure the area around the side supports is clear of parts, tools, **people**
- Click the large 'zero' to calibrate the side supports.
- and enter
- Click the smaller 'zero' underneath to calibrate the 'Y' axis bending roll.
- Press the button once, there is a short delay before it moves.
- If an axis does not zero, pressing the individual axis will calibrate this again.



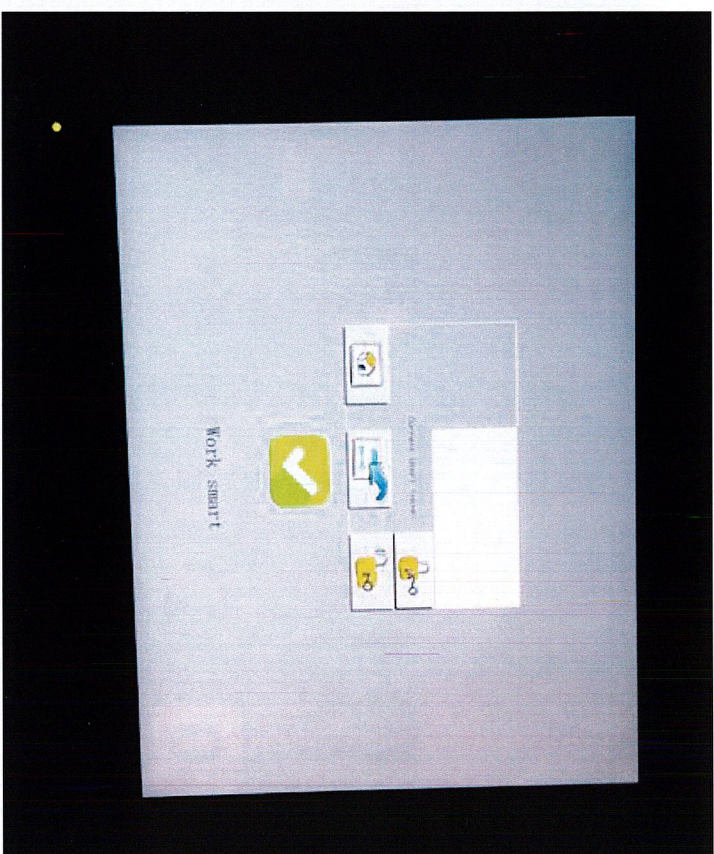
Start up

- You accept the health and safety information if you are trained.



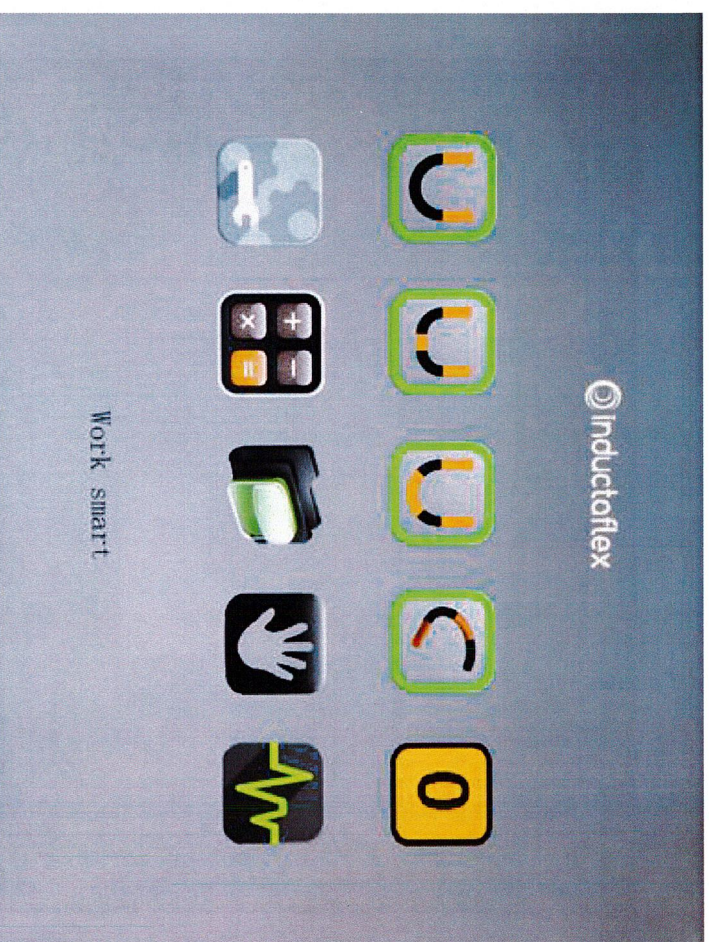
User access

- Type in your user name
- Type in your password
- Click 'unlock' then 'tick'



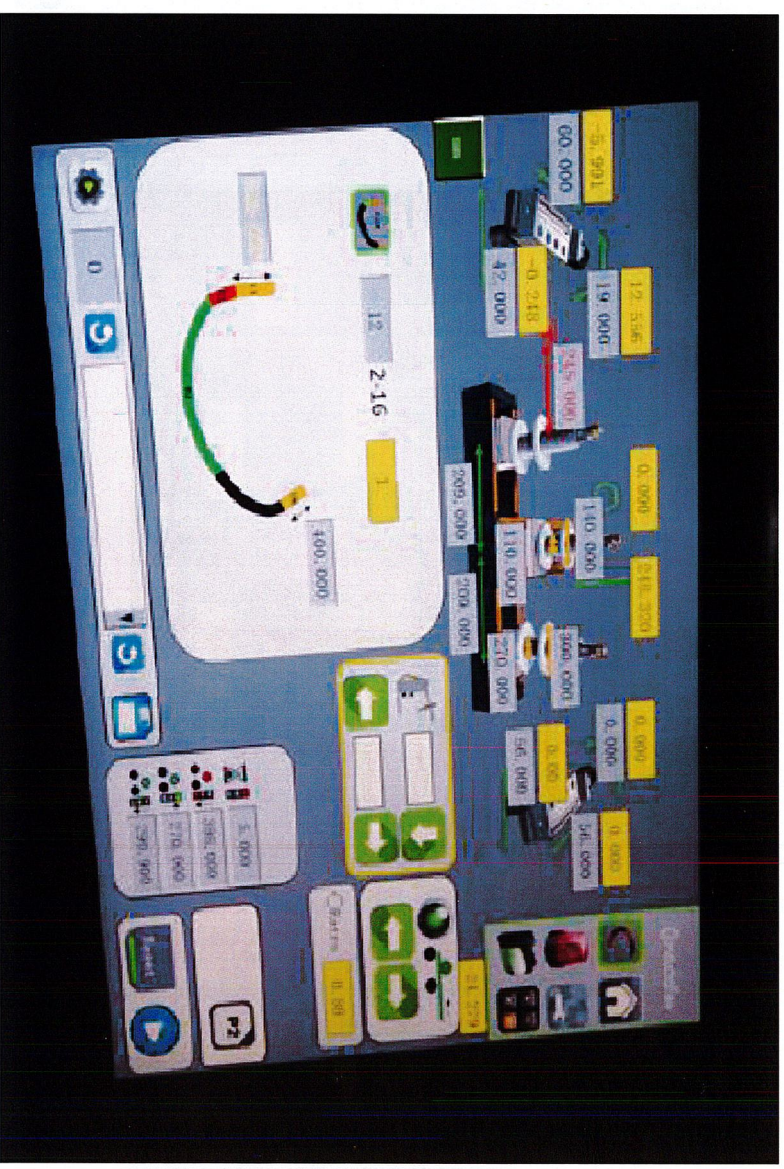
Home screen

- Programs
- Maintenance
- Settings
- Manual
- Files



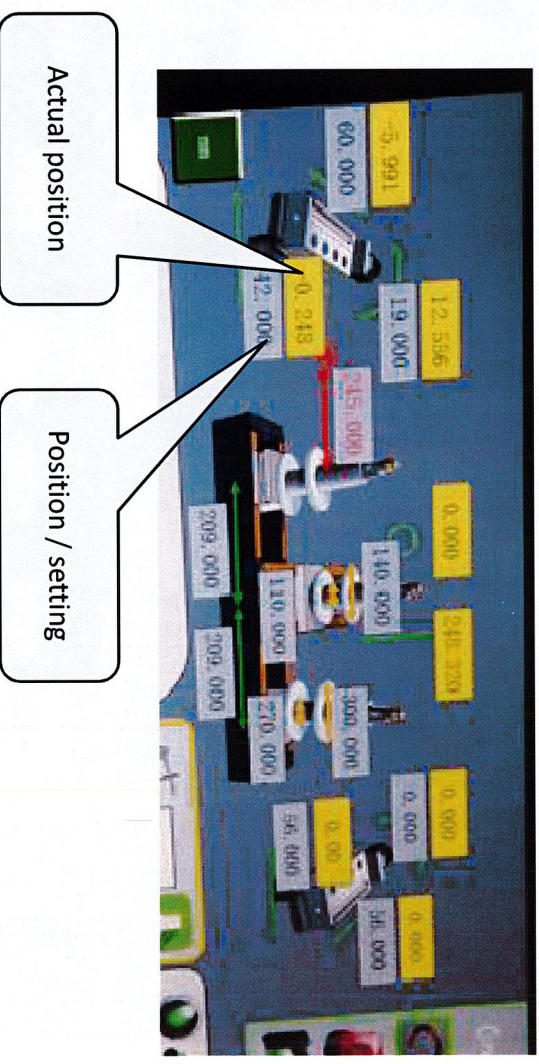
Bend program screen

- All programing / running from same screen



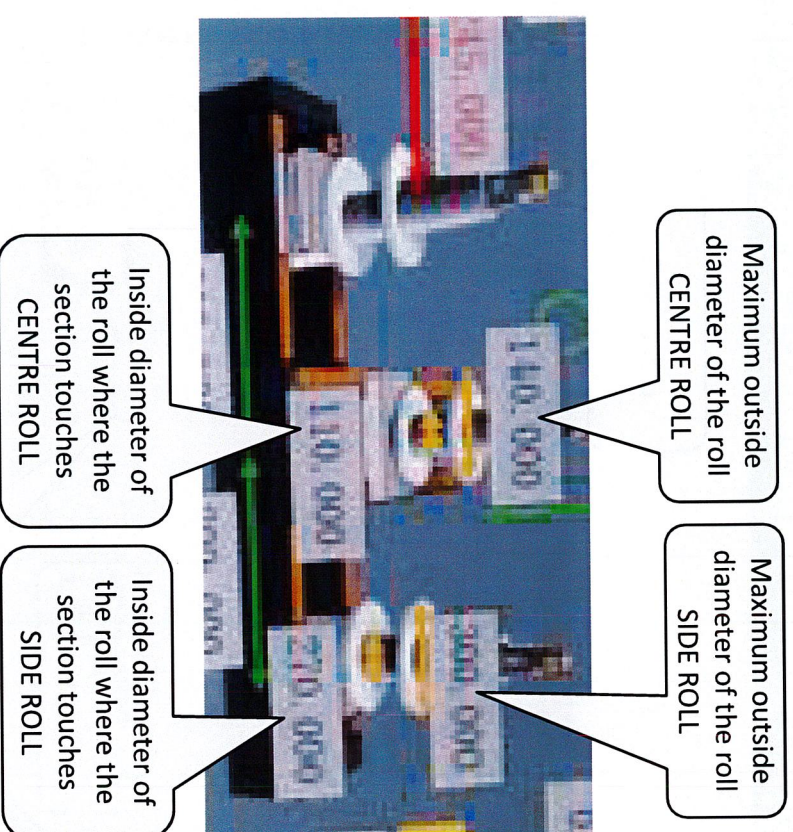
Support roll / position settings

- Manually position the rollers (the position is shown)
- Enter the position in to the grey box
- You can see the location move on the screen when you move the roller. The other grey box is the program setting.



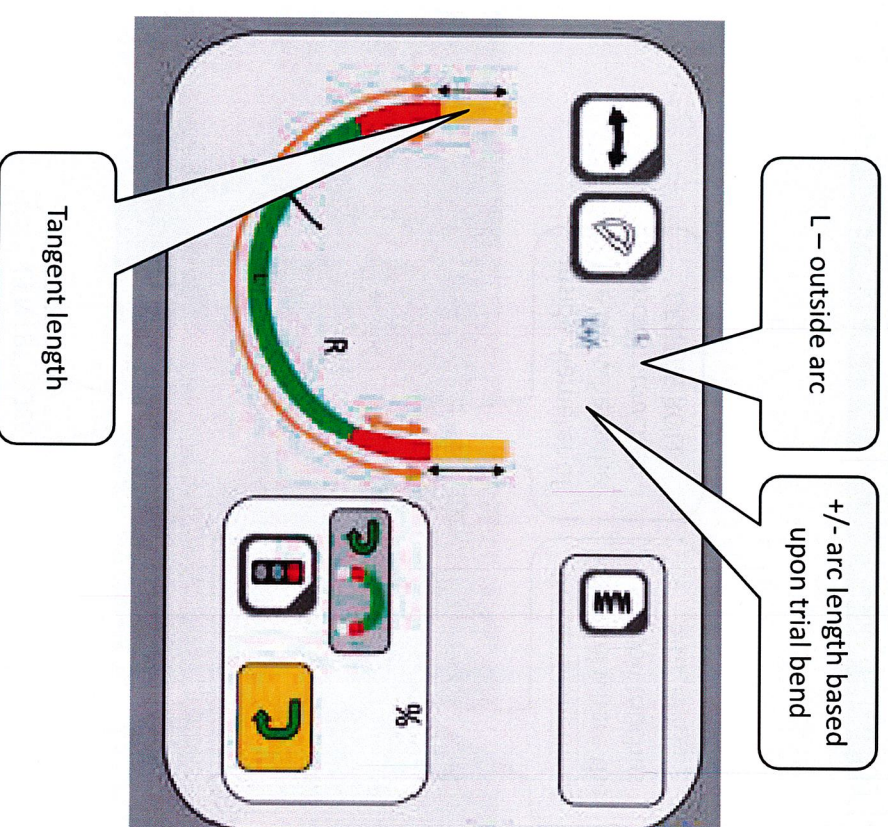
Roller size settings

- Enter the sizes of the rollers.
- The maximum outside roll is important to set the clashing position of the rollers.
- The inside diameter sets the speeds of the rolls if using different sizes.



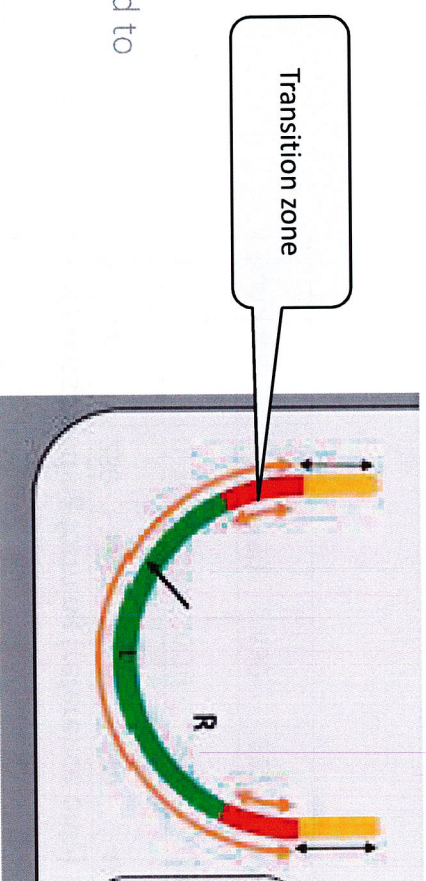
Shape settings

- Enter the tangent details of your bend. If there are no tangents you should use the half the distance between the shafts plus approx. 20mm (3/4") this stops the pressure being applied when the end of the section is touching the roller.
- Use the total outside arc length – R
- L – out side arc length
- L +/- this is used to adjust the length as the material is likely to stretch. This is adjusted after a single bend.



Transition

- Called 'interpolation'
- Blending of the curve to straight or bend to bend.
- Smaller radii longer = transition
- Reference the table for suggested transition length

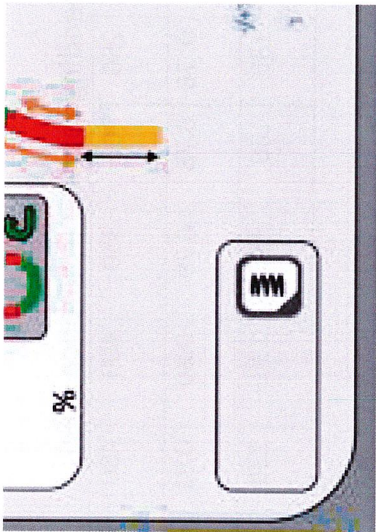


Single pass bending forming (reference only)

Bending radius	250	300	350	400	450	500	600
Rebound	0.76	0.78	0.79	0.80	0.81	0.82	0.83
Transition	130	130	130	130	130	100	100

Elasticity /springback

- Use the guide to calculate this
- Harder material, higher number
- Higher number gives more bend



Single pass bending forming (reference only)

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Rebound	0.76	0.78	0.79	0.80	0.81	0.82	0.83
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Roll program positions

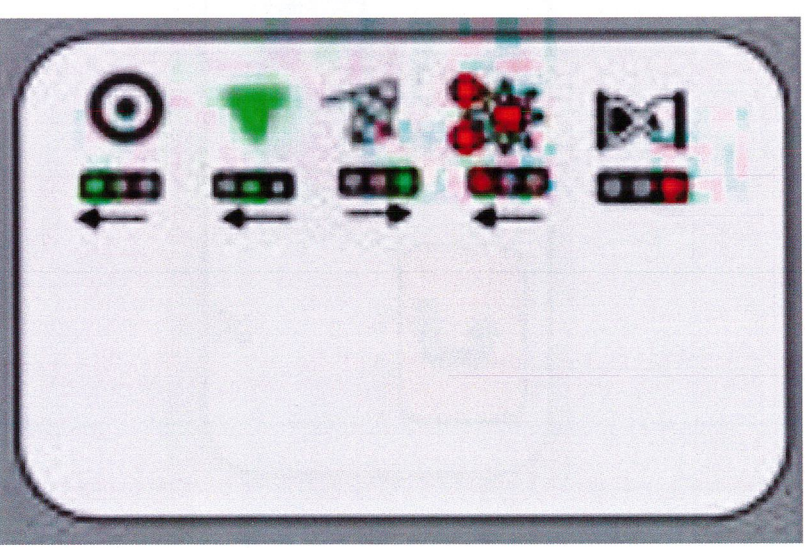
Time in seconds the rolls turn for after returning to the finish position.
Set to zero until trialling manually due to part sticking in the rolls.

Position at which rolls will clash (soft limit) set this 10mm (3/8") before they clash

Position at which central shaft returns to after the program is finished

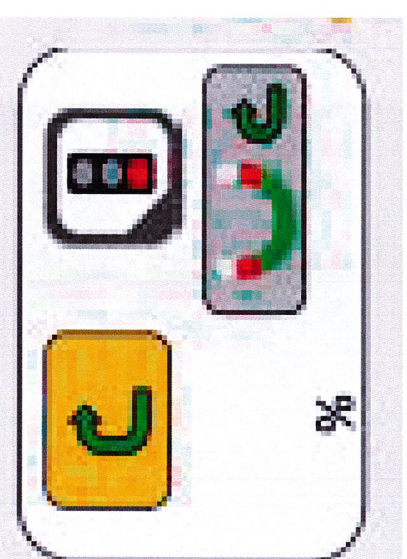
Start position where the section touches all the rolls

The final position the roll will reach on the bend.
This should be under the clashing position.



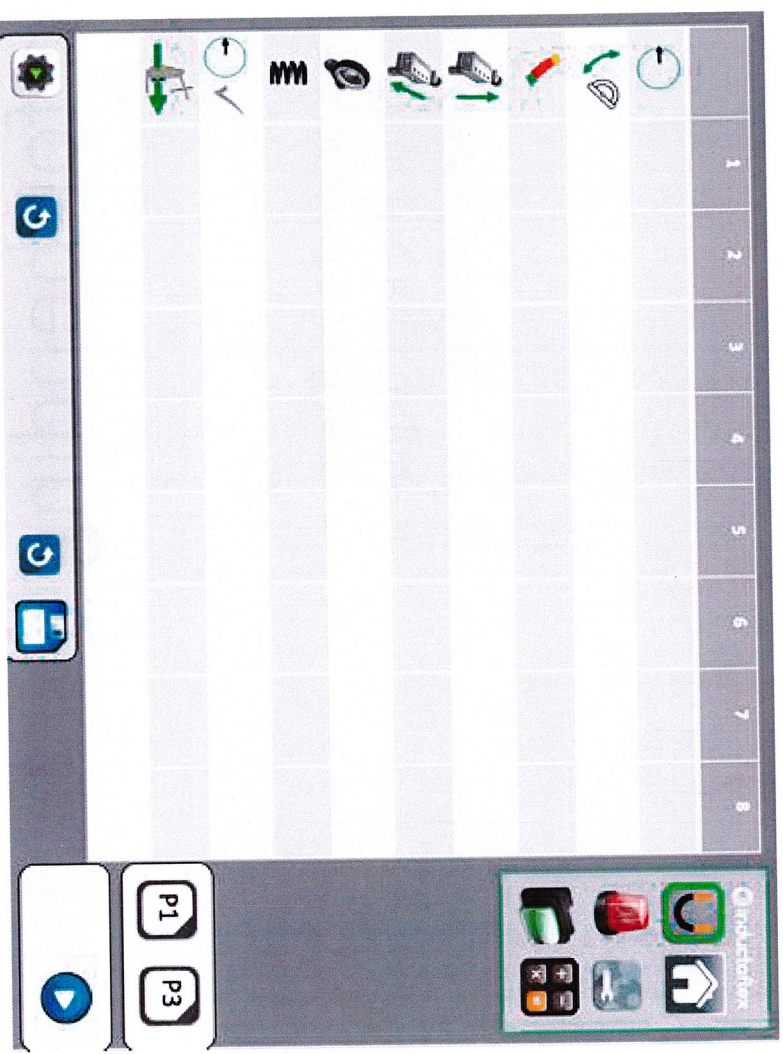
Re-bending

- Click the 'traffic light' to red before starting
- If under bent, you can add a % of bend.
- Based upon % of start and finish
- This is purely to save a bar.
- Only works on under bent material



3D bending

- Enter your criteria / positions
- Set up your locations
- Machine bends in stages as the list



Preparing a section for bending

- Cut the section to length you need
- File the ends to protect the tool
- Filing the inside sides will also help protect the fillers
- Ensure the filler end is not sticking out the end to give a false end reading with the I/R material detector

Manual bending

- Select manual which is the hand symbol
- If you just want to bend to a rise on a bar gradually make the bend recording the steps taken.
- Once you reach the final pass you must repeat the same steps to achieve the same result.
- Certain sections can not be 'back rolled'. Take care if you are bending a single item. 2 or 3 extra passes is quicker than trying to correct a bar

Chord measurement

- The longer the chord length, the more accurate the bend
- 1mm out of tolerance on 500mm chord is almost 5mm on 1,000mm.
- It's better to over bend slightly as you can open the radius manually easier than tightening it.