

# TAUMEL CONTROLS

## STANDARD TAUMEL CONTROLS



- Electromechanical Relay Controls
- Potentiometer controlled dwell timer
- Auto/Manual program switch
- Manual pressure adjustment
- Foot switch/dual hand controls

# TAUMEL CONTROLS

## TAUMEL PLC CONTROLS



- PLC Controller.
- Laminated push button interface
- 3-Line text display
- Parts counter
- Digital forming time display
- Forming tool advance safety timer
- PLC inputs and outputs to operate slider, index tables, fixture clamps and head up switches.
- Manual pressure control
- Foot switch/dual hand controls

# TAUMEL CONTROLS

## TAUMEL 3-AXIS CONTROLS



- Measure and Monitor Stud Height
- Monitor and Confirm Parts Presence
- Programmable Stroke Length with use of Color Touch Screen
- Monitor, and confirm, rivet protrusion length with use of Color Touch Screen
- Monitor the force of actual forming pressure
- Digital/electronically adjusted forming pressure
- Data can be downloaded to a PC or Laptop via a data port
- Early Error Detection reduces Reject Rates and Production Costs

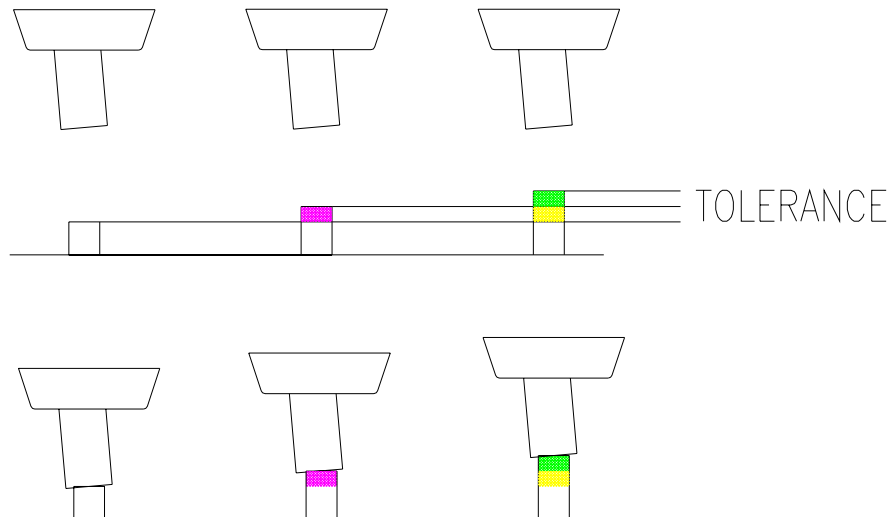
For process monitoring purposes Taumel machines are equipped with linear scales (LVDT), precision sensors and/or with strain gauges and load cells.

The Taumel forming tool is used as a probe to measure and monitor the presence of correct fasteners etc.

The strain gauges and load cells are used to monitor the required heading forces.

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## *Rivet Length Measuring Setup And Operation*



*Fig. 1*

1. In set up mode, the non-rotating stationary forming tool is advanced until it makes contact with a known, and qualified, rivet/fastener (Fig. 1)
2. The probe/tool records the correct rivet length and will subsequently look for this dimension during the production cycle.
3. Rivet length tolerances will be digitally entered via control touch screen
4. Required forming depth will be digitally entered via the control touch screen.
5. Min. and Max. forming time will be digitally entered via control touch screen
6. Forming pressure is digitally entered via control touch screen

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## *Forming to Constant Head Height: (Without Mechanical Stop)*

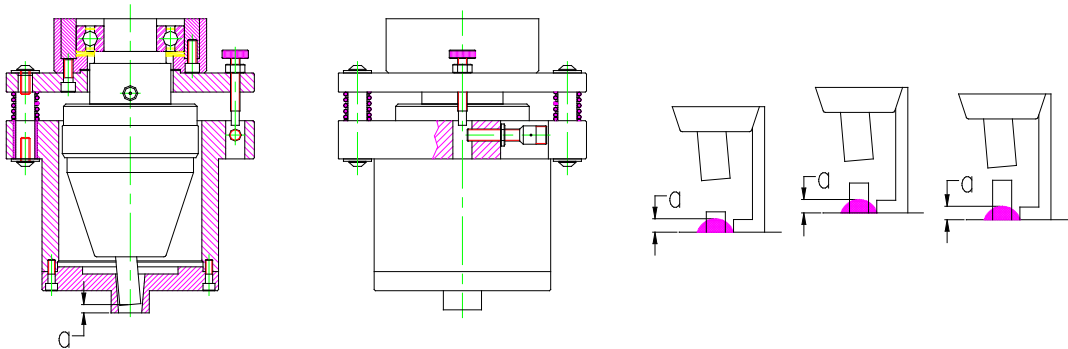


Fig. 2 Compression device combined with adjustable proximity sensor.

1. The forming tool advances and compression nose will contact component surface. (Sensing is done independently of total part height).
2. While the forming tool keeps advancing, the distance between the form tool tip and the compression nose (head height "a") is controlled by an adjustable proximity sensor.
3. At the point that the correct head height is reached, the forming tool will return to its home position.
4. The dwell timer is set to a max. time in case the tool is unable to reach the desired height, in which case the tool will retract after the dwell timer times out.

## *Forming Incrementally from Measured Rivet Height*

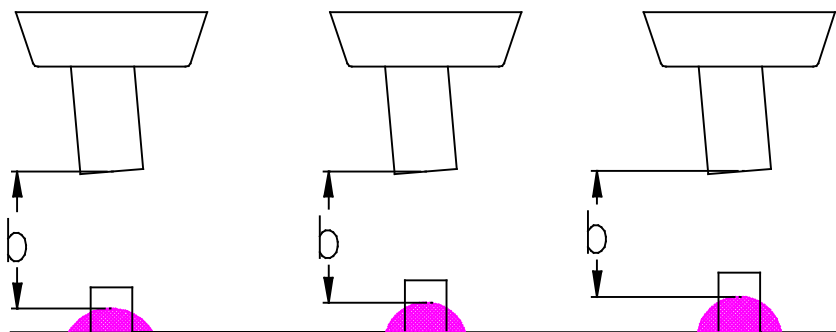
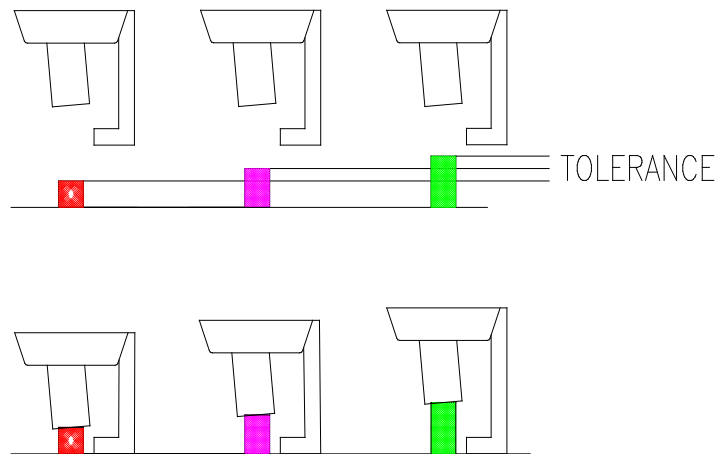


Fig. 3

1. Forming tool advances to top of rivet.
2. Rivet height is measured and compared to correct height.
3. Forming tool will advance by the constant dimension "b".

## TAUMEL CONTROLS

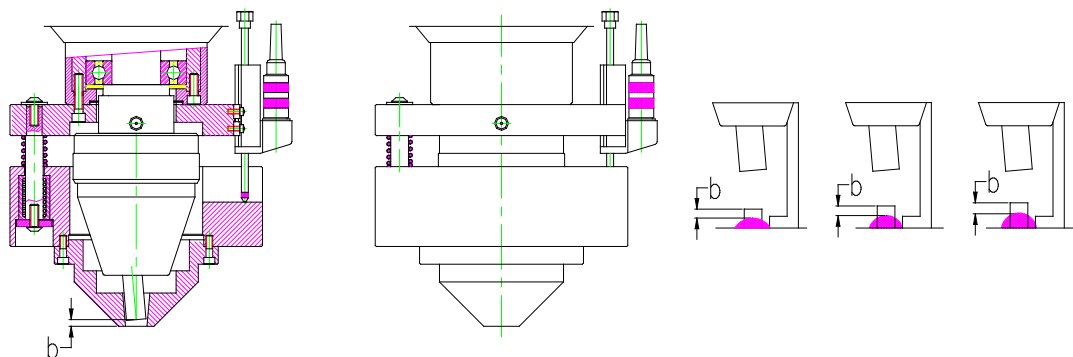
### ***Forming Incrementally from Measured Rivet-end Protrusion:***



**Fig. 4: Differential measuring device**

1. Forming tool and compression probe advance until contact is made with rivet-end and top of components.
2. Rivet protrusion is measured and checked.
3. Should the dimension deviate beyond the set tolerance span, the forming tool will retract to its home position and an error message will be displayed on the machine's control touch screen.

### ***Forming with Constant Stroke Length using Linear Scale (Lvdt) and Compression Probe***

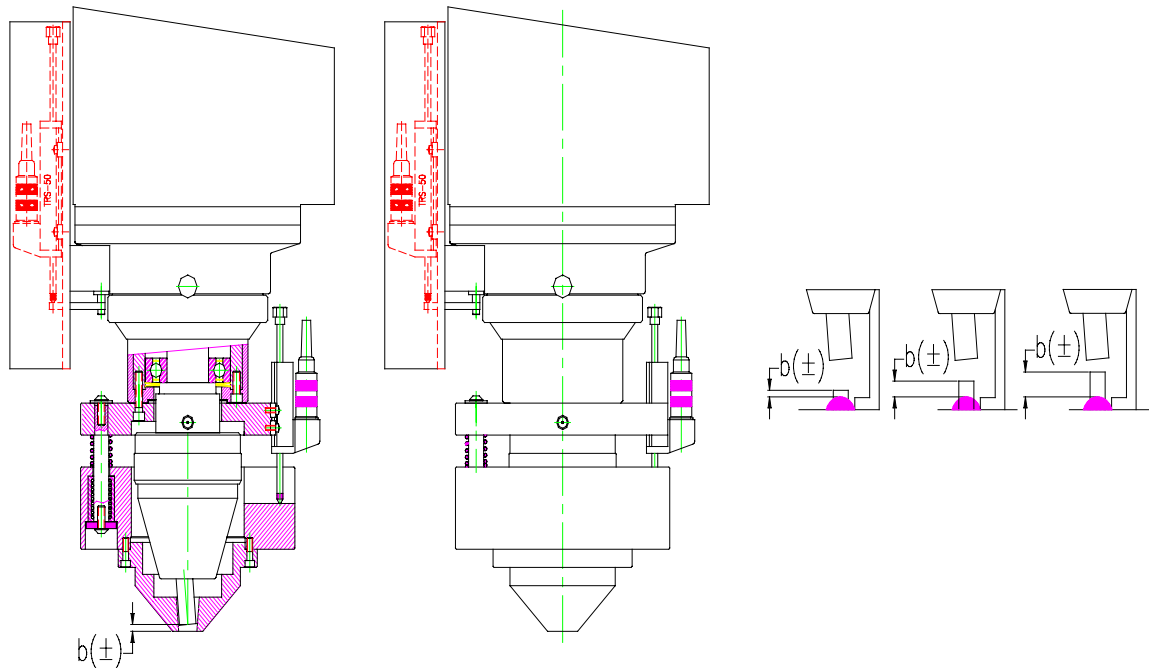


**Fig. 5: Compression probe combined with linear scale (LVDT)**

1. The forming tool and compression probe advance until contact is made with the rivet-end and the top of components.
2. Rivet protrusion is measured and checked.
3. Should the dimension deviate beyond the set tolerance span, the forming tool will retract to its home position; and an error message will be displayed on the machine's control touch screen.
4. After verifying the correct dimension, the machine continues on its programmed path to predetermined stroke length "**b**" and then returns to its home position.

## TAUMEL CONTROLS

**Forming Incrementally from Measured Rivet Height and Rivet Protrusion using linear scale (LVDT) and compression probe.**



*Fig. 6: Compression Probe Combined With Linear Scales (LVDT)*

1. Forming tool and compression probe advance until contact is made with rivet-end and the top of components.
2. Forming tool/probe measures and checks rivet length.
3. Compression probe measures and checks rivet protrusion.
4. Taumel Process Controls continuously monitor and compare deviations from mean dimensions and automatically compensate to adjust the forming distance accordingly.
5. Should the dimensions deviate beyond the required and pre-set tolerance span, the forming tool will retract to its home position; and an error message will be displayed on the machine's control touch screen.
6. After verifying the correct dimensions, the machine continues on its programmed path to the predetermined and corrected forming depth " $b$ "; and then returns to its home position.