

Positioning control PosCon 1900

Electronically controlled / regulated Z-axis - modular system

A constant, defined contact force of the soldering tip on the substrate is essential in automated ultrasonic soldering. Therefore, a reproducible, precise control of the contact force of the soldering tip to the substrate is necessary for perfect soldering results.

For this specific purpose, the PosCon 1900, a self-contained, motorized Z-axis, has been developed to accommodate the ultrasonic robot soldering heads # 9200-127 and # 9500-127. With constant soldering tip force, the system can automatically compensate, substrate height differences of up to +/- 15mm.

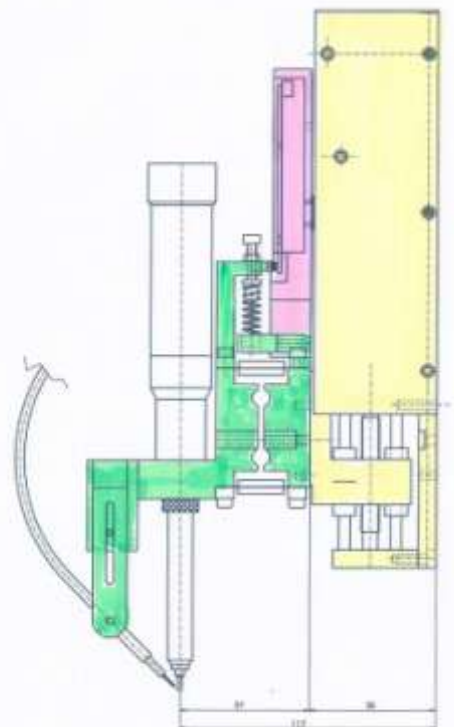
The complete PosCon 1900 system axis consists of three parts:

1. Motorized Z-axis with a path of +/- 15mm. The electronic motor controller with height control is integrated in the housing
2. Leaf spring mounted soldering head holder (support). Option: Fixing element for solder wire feed.
3. Electronic Height measurement with LED bargraph display. Leaf spring center position corresponds to the center of the electronic measuring device (green LED). The electronic display of the measuring system comprises 21 LEDs and corresponds to a mechanical way of the spring device of a total of 0.6 mm. Each 0.3mm upwards corresponds to 10 yellow LED and 0.3mm down also 10 yellow LED. Thus, we achieve a mechanical resolution of only 0.03mm (30µm) per LED increment, which allows a precise and very fine control of the system

In controlled operation, the motorized part of the axle travels downwards or upwards as required, so that the height measuring system always remains in the middle = green LED. This guarantees a constant force on the soldering tip.

- 1** 1900-432 Motorized, autonomous Z-axis with control electronics.
- 2** 1900-412 Mechanical leaf spring loaded Soldering iron holder (support) For holding the Robot soldering heads 9200-127 / 9500-127. (Illustration with optional fastener for solder wire feeder hose)
- 3** 1900-422 Electronic Height Measurement Device with sensor and display.

Read these operating instructions carefully first, before you make or change settings on this system. It is important that the following order of commissioning be followed exactly.



Please also consult the description video at www.sonicbonder.com

01 - Scope of delivery

The system includes:

- 1 x motorized Z-axis incl. leaf spring compensation, electronic scanning sensor and motor control
- 1 x remote control box for manual operation, incl. Connection cable to axle
- 1 x 230V PowerSupply for the 24V power supply of the axle



Control box functions:

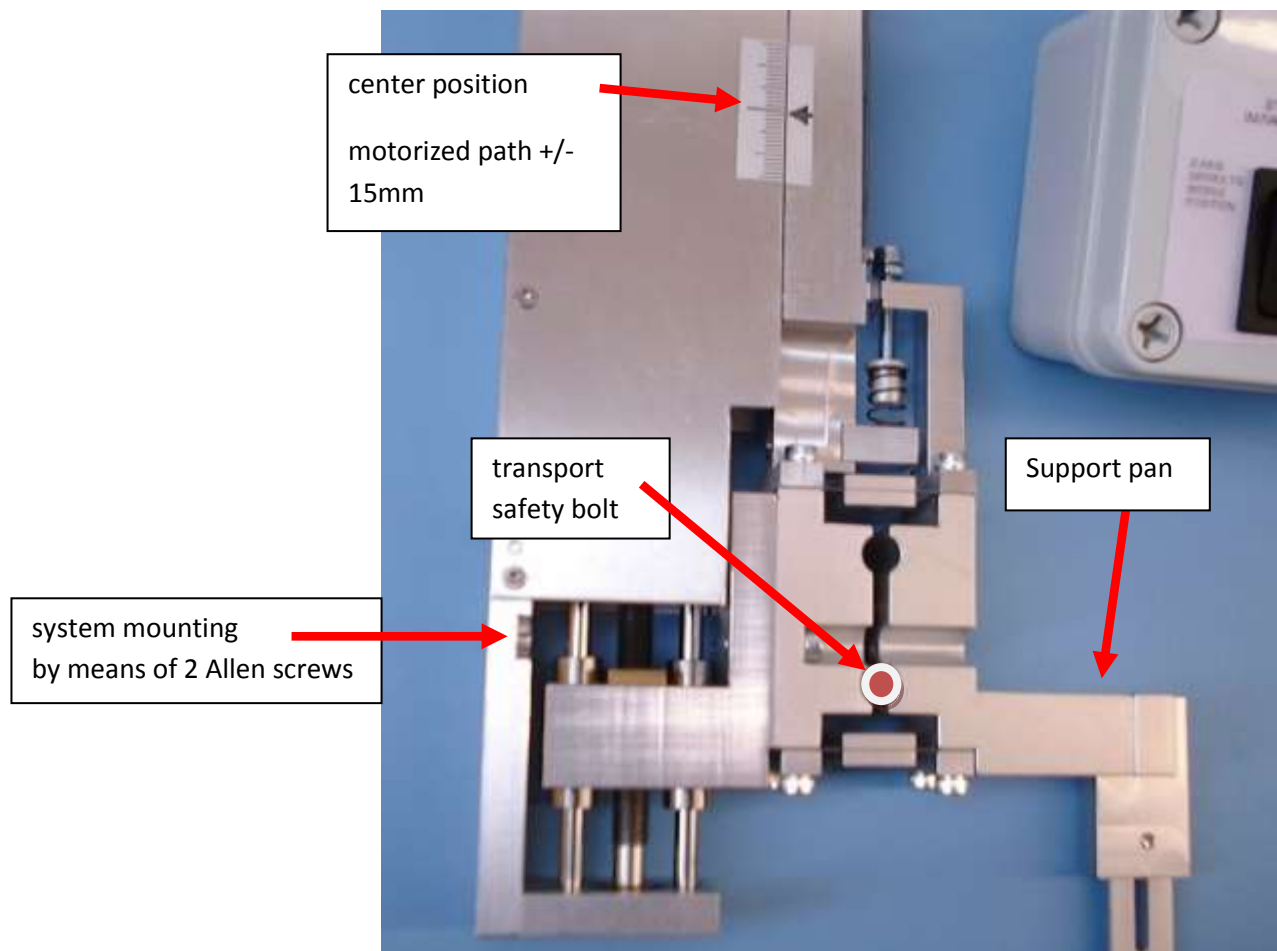
1. Switch for Z-Axis system Initialization
2. Switch for up-/down movement
3. Switch for Height Control on/off

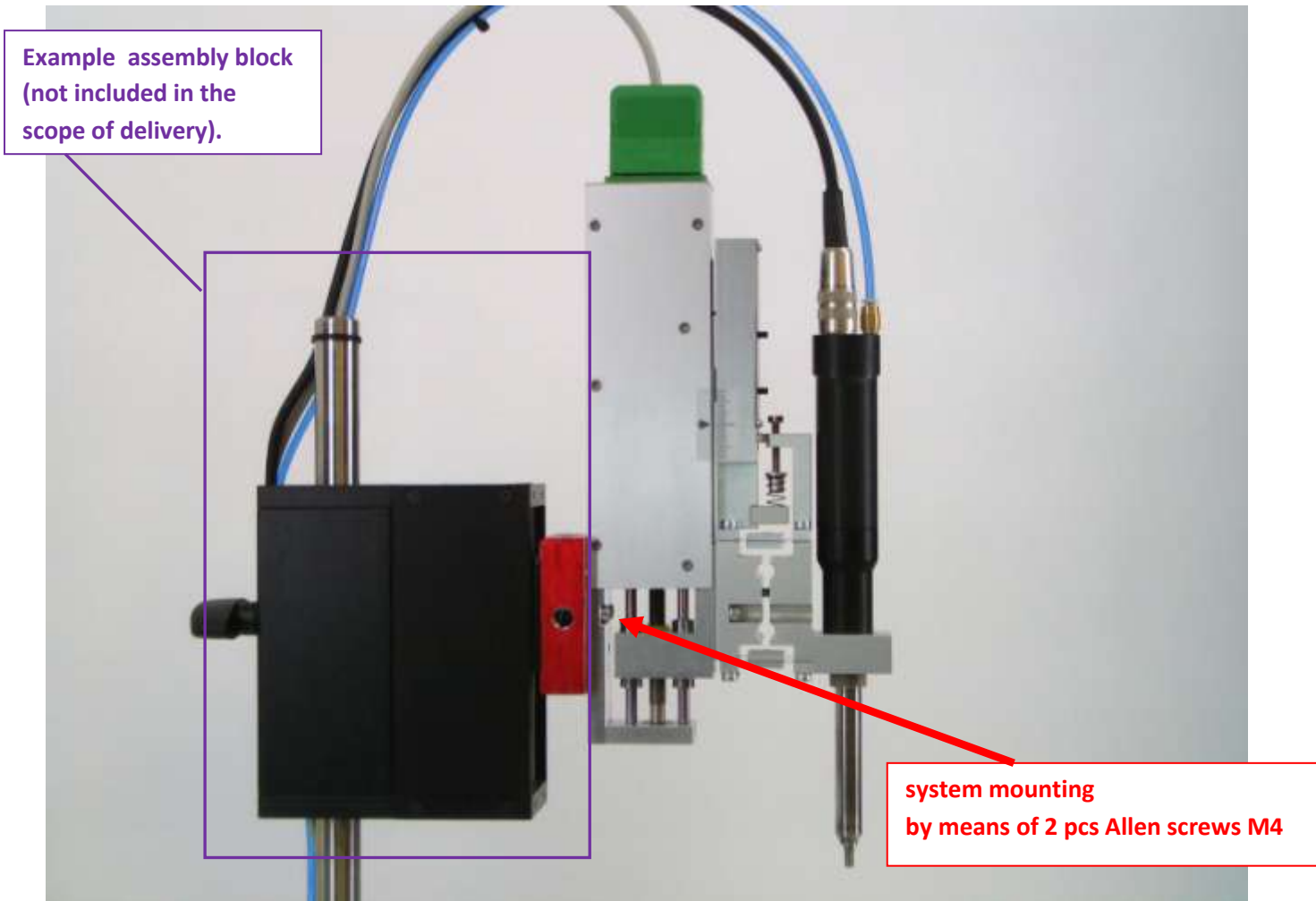
The signals for these operating elements are also accessible by 8-Pin connector. To activate the controls. The signals must be tied to ground.



02 - Mechanical assembly of the motorized Z-axis

- The system is delivered in initialized mode. This means that the axis is in the middle position
- The safety bolt of the leaf spring compensation is inserted. Attention> not yet remove!
- Mount the robot soldering iron in the support pan and secure it with the locking screw.
- Integrate the axis system in the above state using the 2 pcs. Allen screws (on the rear plate) in the overall system so that the soldering tip is approx. 8mm above the substrate to be soldered.





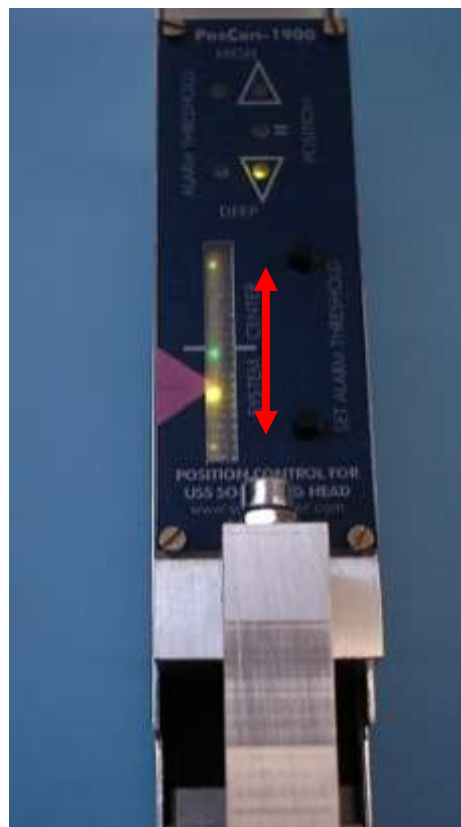
03 - Electrical assembly of the components

The motorized Z-axis is supplied with power via the manual control box (+ 24V). The manual control box has an **on / off** switch integrated.

- Connect the connection cable (8-pin green terminal and 15-pin Sub-D). Plug 15 pin Sub-D on manual remote control box side and the 8 pin green connector on top of Z axis.
- Connect the power supply to the manual remote control box. Likewise, connect the mains connection, but leave the **on / off** switch switched **off**.
- Connect (USS connecting cable and air hose) to the soldering tool top end.
- Optional: Install soldering wire feeder device

04 – Commissioning

- After all connections have been installed, the locking pin (safety bolt) of the leaf spring compensation can be removed.
- Now the power can be switched on.
- An initialization sequence is displayed on the position control display. This is used to set the alarm levels, which are set at the end of the upper and lower LED bars. They can be seen by constant weak illumination of the 2nd uppermost or 2nd lowermost LED. When these levels are exceeded, the respective red alarm LED lights up. These settings do not need to be changed, that is, the corresponding buttons should NOT be pressed! After the initialisation / switch-on sequence, the system is ready for operation. This means that the measuring function works. This can be seen by the display of the LED bar very sensitive to shocks responding by up and down movement of a single LED.



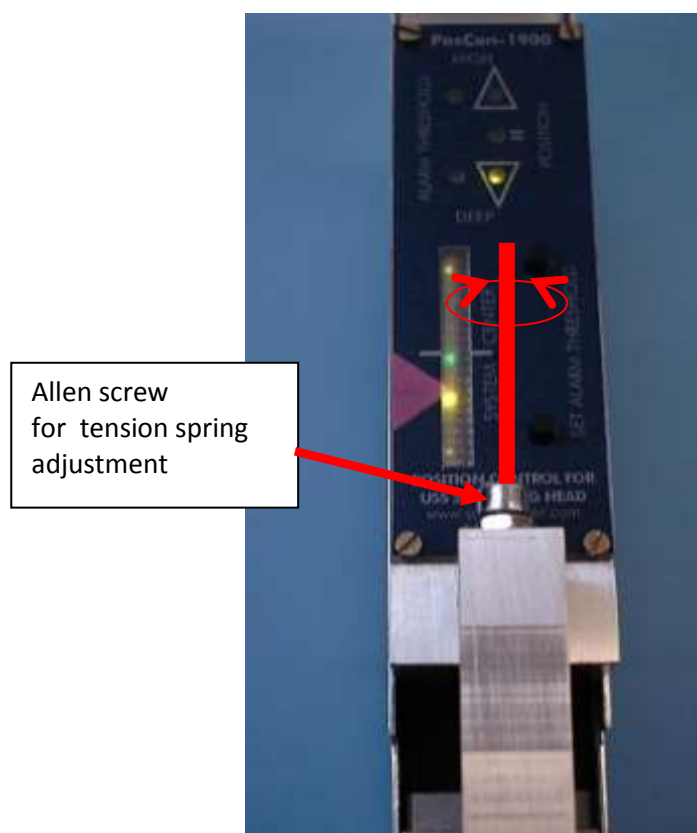
05 - Mechanical adjustment

Since, depending on the used cable / hose for air and electrical connection of the soldering tool, also dependent on cable balance (gooseneck) and the wire feed hose, the static forces (load) of the soldering iron in idle (hanging in air / soldering tip not touch the substrate), the round tension spring of Systems are adjusted after assembly.

This is done as follows:

Carefully turn the Allen screw from above so that the measuring LED comes to the 4th to 5th position below the green center LED.

Note: To measure the 'Idle Position', remove the Allen key from the screw and allow the system to settle. If necessary, correct one more time until the measuring LED remains in the 4th - 5th position at idle.



06 – Operation

- After all the above settings have been made, the '**HEIGHT CONTROL**' switch in the red area of the Remote/Manual-Box can be set to ON. Now the axis moves down until a touch-down of the tip onto the substrate takes place. From then on, the system adjusts to the center position (green LED of the display) with constant force.
- The switch can be set to OFF at any time. The control / position control is switched off and the axle moves approx. 4mm upwards.

In fact, only this switch is needed for operation. The buttons manual UP-DOWN and initialization can be used but are not needed for normal operation.

