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ONLINE WSS 3000

INSTALLATION MANUAL V1.0

1. CONTENT

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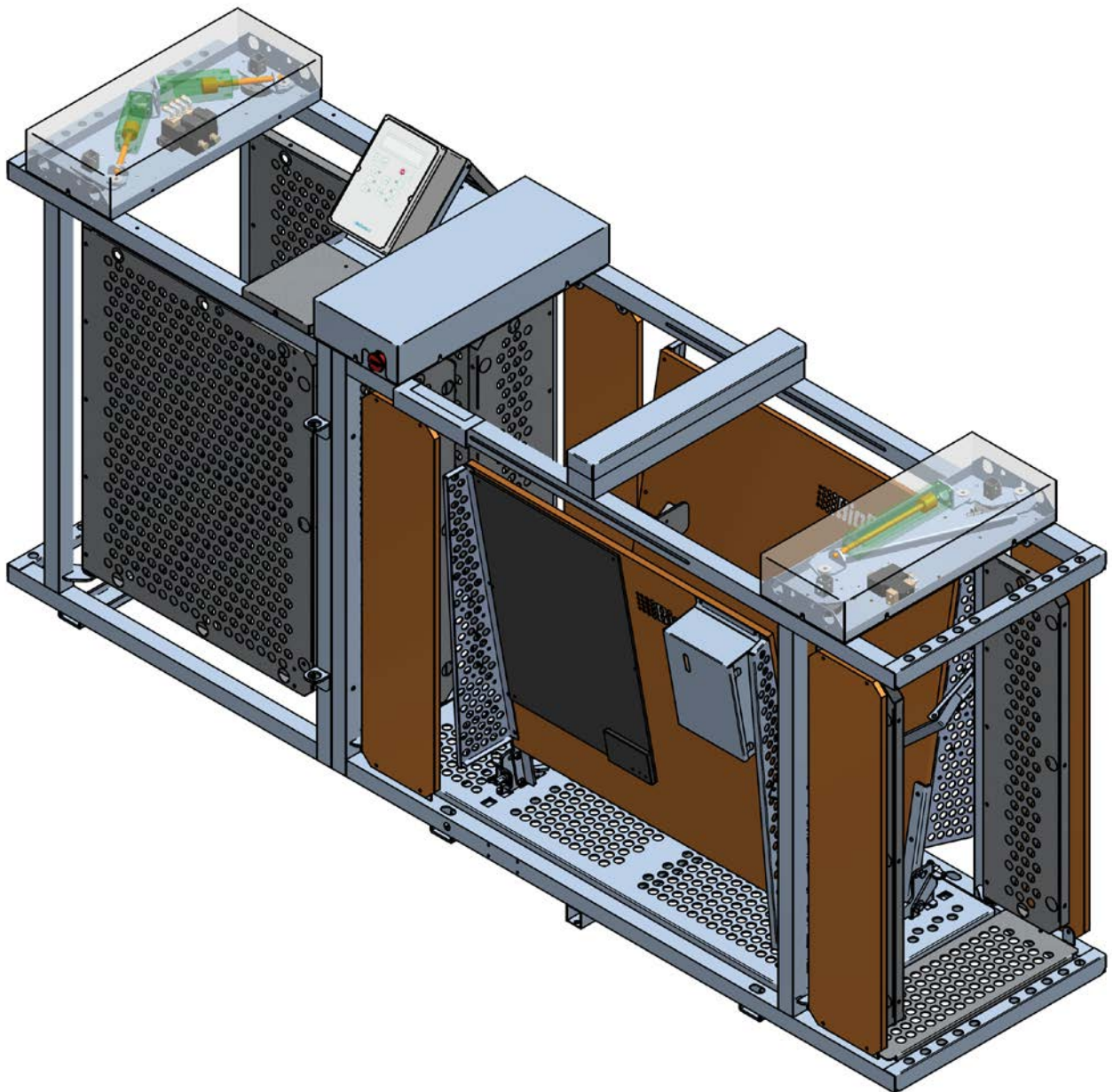
1.1. Changes in this manual compared to previous version

- Version 1.0 is the first version of this manual.

Note:

All information in this document describes the product and details 'as is'. BioControl cannot be held liable for (consequences of) incorrect or missing information in this document. Check our website for latest version of this document and information on this product.

2. GENERAL DESCRIPTION

The Online WSS 3000 is designed for high speed weighing and sorting of sheep and goats. The WSS sends the transponder number and animal weight to the PC-host. The PC-host then sends the sorting gate number to the WSS. The animal then leaves the WSS. The WSS system comprises of:

1. Stationary Reader (SR3000) performs following functions:
    a. identifies the animal transponder with the panel antenna
    b. communicates with the WSS Control Unit via RS485
    c. operates the optional spray markers (max. 2)
2. WSS Control Unit performs following functions:
    a. communicates with the PC-host via RS232
    b. communicates with the SR3000 via RS485
    c. operates the gate valves
    d. reads the load cells
    e. User Interface for calibration, set-up and manual gate operation
3. Photocell to detect the animal
4. Panel antenna
5. Entry gate
6. Exit gate
7. Sorting gate
8. Weighing platform
9. Spray marker (optional)
10. Power Supply (wall mounted)
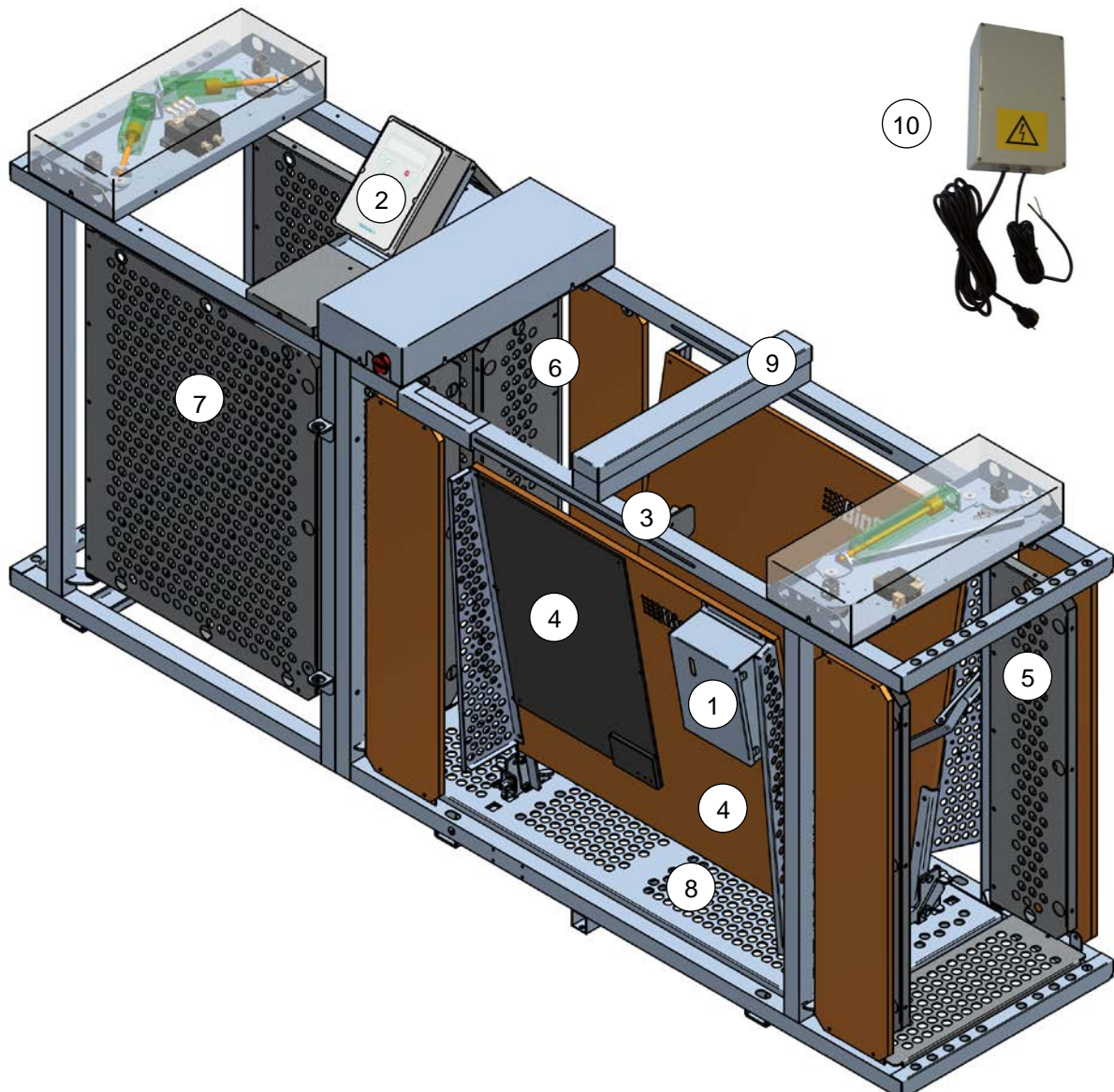
2.1. Operation

1. WSS in rest state: entry gate open, exit gate closed.
2. Animal walks in. This is detected by the weight on the platform.
3. The entry gate is closed behind the animal when the photocell detects the animal
4. The transponder is identified with the SR3000 and panel antenna
5. When the weight is stable the WSIC sends the weight to the SR3000
6. The SR3000 sends the transponder number and the weight to the PC-host
7. The PC-host sends the sorting gate information to the WSS
8. The WSS puts the sorting gate in the correct position and opens the exit gate.
9. When the animal leaves the platform and is outside the photocell the exit gate closes and the entry gate opens.

2.2. Prerequisites

1. WSS operation must be supervised to assist when an animal gets stuck or two animals get into the station.
2. WSS must be placed on a stable, flat floor.
3. RFID ear tag of all animals on the same side of the animal (left ear).
4. No gate/ironwork within 100 cm from the antenna.
5. Install the WSS such that the antenna does not identify animals outside the WSS.
6. Prevent dragging-in dirt/straw from animals that walk in. Periodically clean the floor.
7. Air compressor 100 liter/8 bar, with water separator and pressure reducing valve.
8. Ensure that animals can't reach cables.
9. Reading RFID transponders is subject to electrical noise. Some equipment can cause noise, such frequency controlled motors, ventilation fans, some fluorescent light, etc.
10. The reading can be affected by other RFID-readers that are active.

!
11. The weighing platform is mounted on 2 load bars. In the load bars are electronic load cells. It is important that the platform does not touch other objects than the load bars. Therefore: keep it clean under the platform and inside and outside the load bars!!
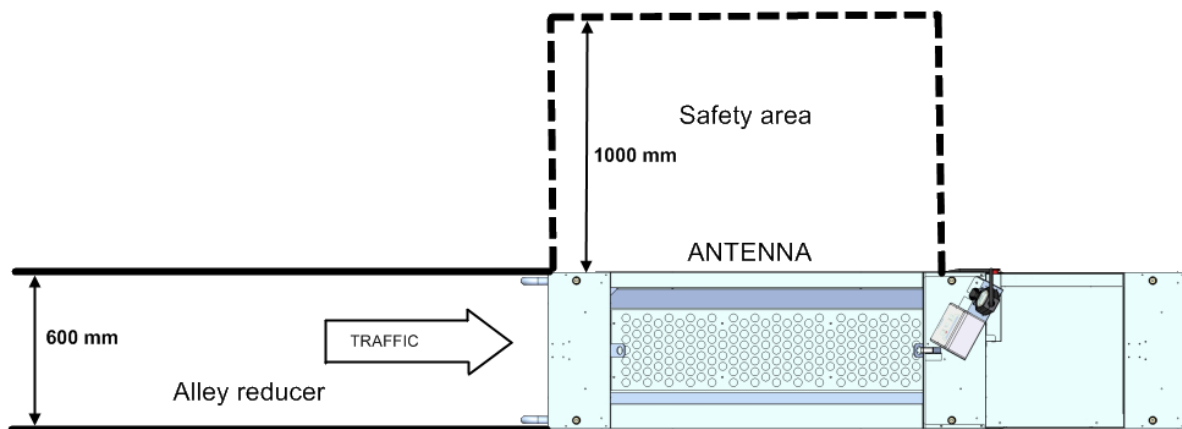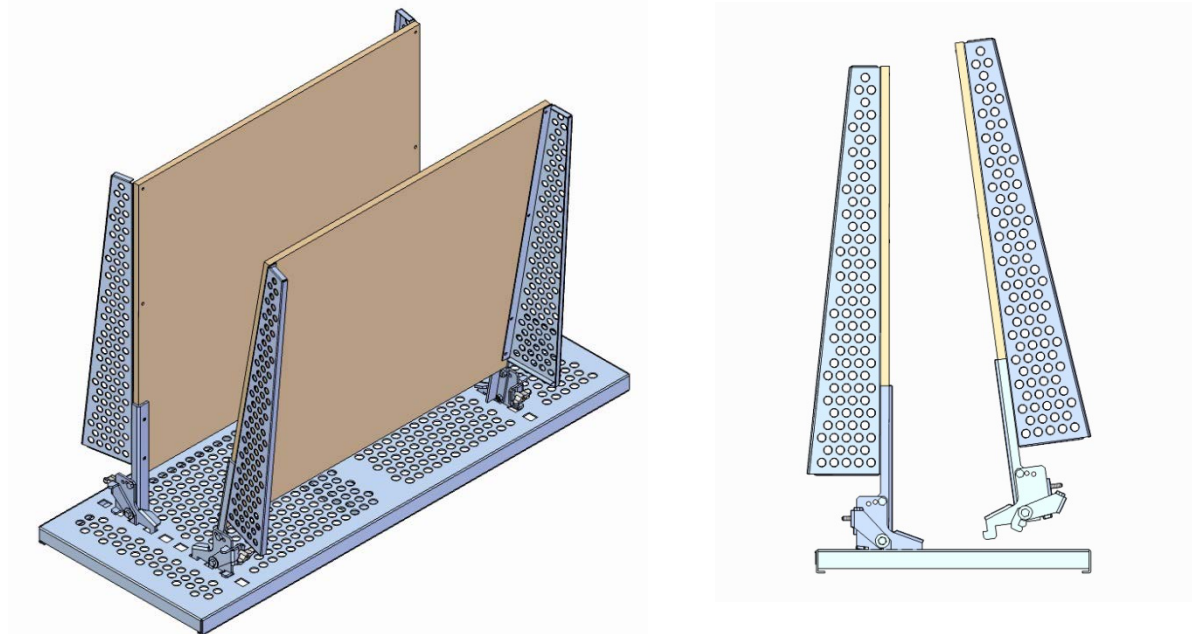

Recommended installation

3. INSTALLATION

### 3.1. Adjustable side walls

The side walls on the weighing platform can be easily removed and adjusted with respect to the opening between the side walls and the angle of the side walls.

To adjust the width, loosen the wing-nut, press down the lock-bracket and lift out the race. Choose a new hole and put the side wall back in.


To adjust the angle, take out the bolt in each side as shown, choose an angle and put the bolt back in a new hole.
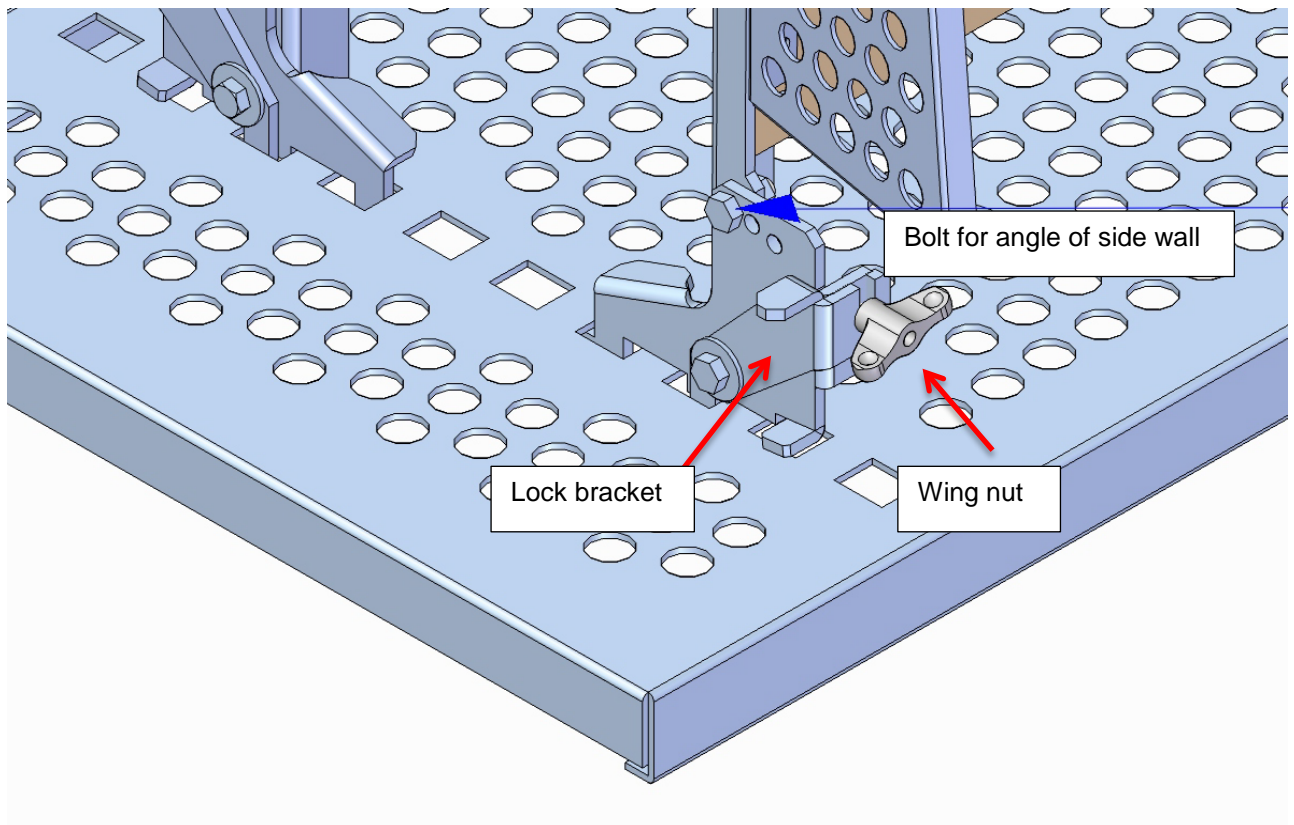
3.2. **Photocell adjustment**

A photocell is mounted on the side of the station such that it is activated when the animal is practically inside the station. This photocell controls the closing of the entry-gate. It is roughly adjusted at the factory; but should normally be adjusted by the user so the entry-gate closes as soon as possible after the animal has entered, but without squeezing it unnecessary. The photocell reacts better to white objects, so with dark animals, the photocell must be adjusted. A mix of white and black animals will make the full-automatic function of the system difficult.
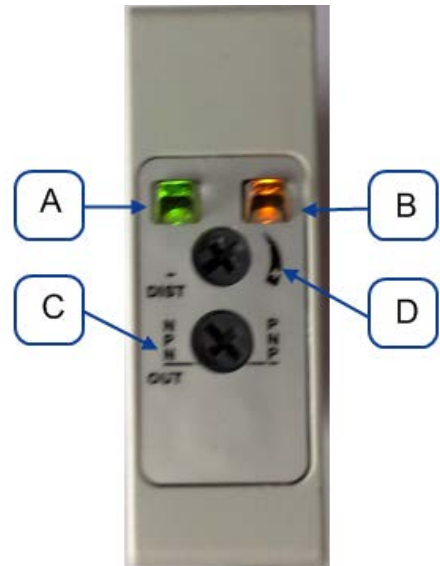
A – Green light indicates that the cell is powered.
B – Yellow indicates detection.
C – Function NPN or PNP. Shall be NPN.
D – Sensitivity.

3.3. **WSS Connections**

Connection diagram for Control unit WSS into the SR and PC-host

Please note that the cable colors may deviate from below table!!!

Table 3.1: Description of cable connectors to WSS

Connector	Function	Color	Description
1	Load cell left	Green	Load cell left
2	Load cell left	Red	Load cell left
3	Load cell left (GND)	Clear	Load cell left
4	Load cell left	Grey+Black	Load cell left
5	Load cell left	Red+Purple	Load cell left
32	Photocell GND	Blue	Photocell
34	Photocell +12V	Brown	Photocell
35	Out 1 +12V / 0V (PNP output)	White	Enter gate control
36	Out 1 GND	Black	Enter gate control
37	Out 1 +12V / 0V (PNP output)	White	Gate 1
38	Out 2 GND	Black	Gate 1
39	Out 1 +12V / 0V (PNP output)	White	Gate 2
40	Out 3 GND	Black	Gate 2
41	Out 1 +12V / 0V (PNP output)	White	Exit gate control
42	Out 4 GND	Black	Exit gate control
43	Input 1 Normally high (NPN input)	Black	Photocell
44	Input 2 Normally high (NPN input)	White	Photocell
47	+12V IN	White	Pin 13 to SR Power In
48	GND	Black/Green-Yellow	Pin 14 to SR GND In
23	GND	Black	Pin 5 RS232 to PC
24	RS232-RXDB	Yellow	Pin 3 RS232 to PC
25	RS232-TXDB	Green	Pin 2 RS232 to PC
19	GND	White	Pin 5 RS485 to SR
20	RS485-A1	Yellow	Pin 6 RS485 to SR
21	RS485-B1	Green	Pin 7 RS485 to SR

Extra connection to PC via RS485 (works when dipswitch 1 = 1000 0001)

13	RS485-A2		A - RS485 to Converter
14	RS485-B2		B - RS485 to Converter
17	GND IN master		GND from Converter
18	+12V IN master		+12V from Converter

Table 3.2: Description of cable connectors to SR

Connector	Function	Color	Description
11	Dig Out1 GND	Black	Exit spray marker control
12	Dig Out1 +12V	White	Exit spray marker control
13	+12V IN	White	Pin 47 to WSS Power In
14	GND	Black	Pin 48 to WSS GND In
5	GND	White	Pin 19 GND to WSS
6	RS485-A	Yellow	Pin 20 RS485-A1 to WSS
7	RS485-B	Green	Pin 21 RS485-B1 to WSS

3.4. Pneumatics

The WSS 3000 has 4 pneumatic cylinders that are controlled by electro valves. There is an emergency stop button. When this is pressed, the pressure on the valves is released.
To reset the emergency button, it must be turned.

! **NB:** Be careful when you work with pneumatics. The emergency button should be pressed before any work is carried out to avoid the danger of squeezing.

|	Description
A	Sortgate cylinder
B	Sortgate valve
C	Exit gate cylinder
D	Exit gate valve
E	Entry gate cylinder
F	Entry gate valve
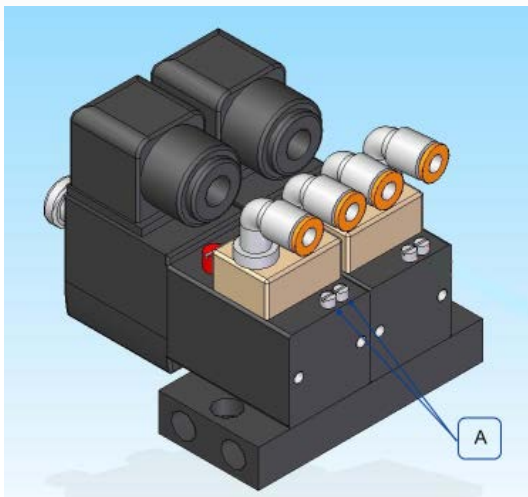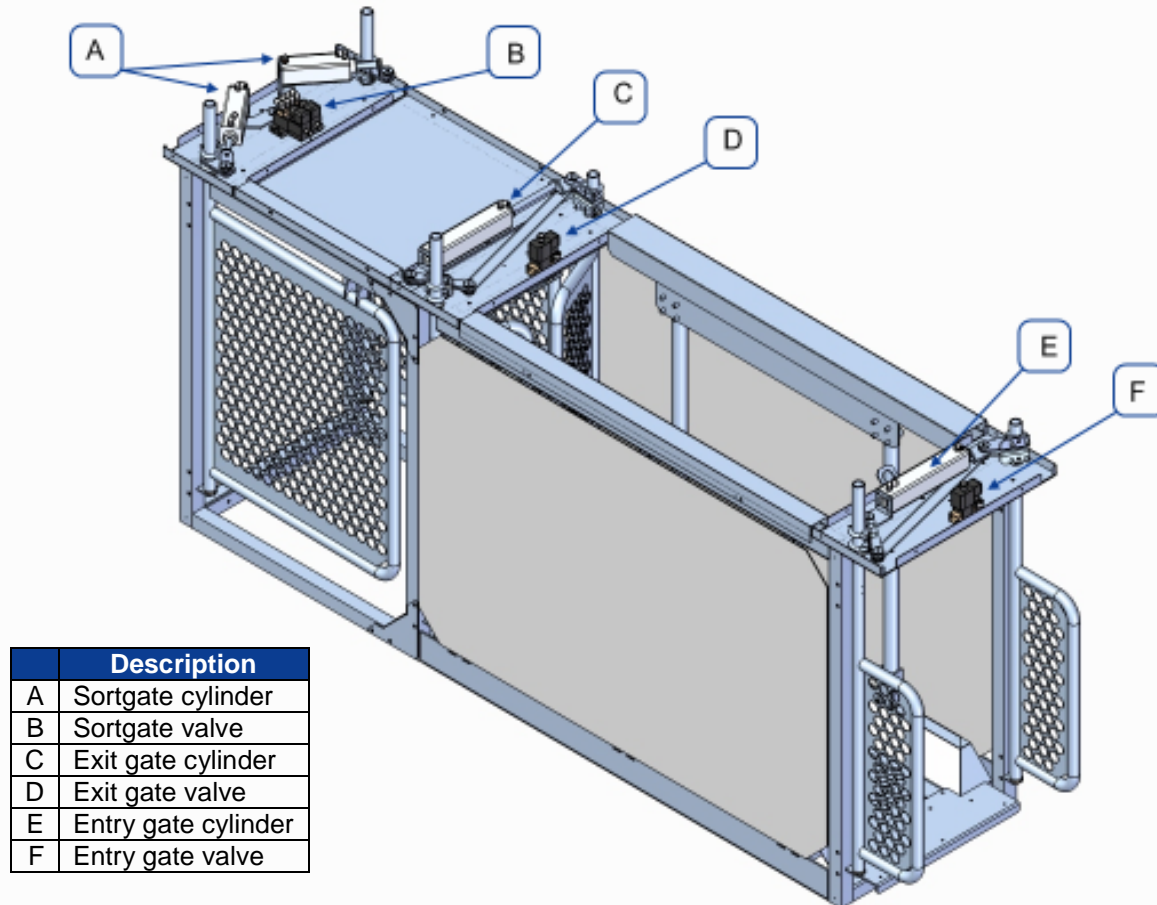
Adjust the speed of movement on the cylinders by adjusting the screws on the valves as shown on the figure under, one screw for each movement (in/out) Adjust the air pressure from the compressor to desired force on the gates. Do not use higher pressure than necessary to avoid injuries to the animals.
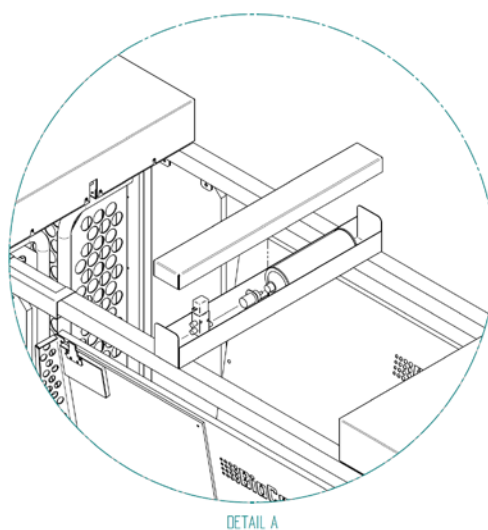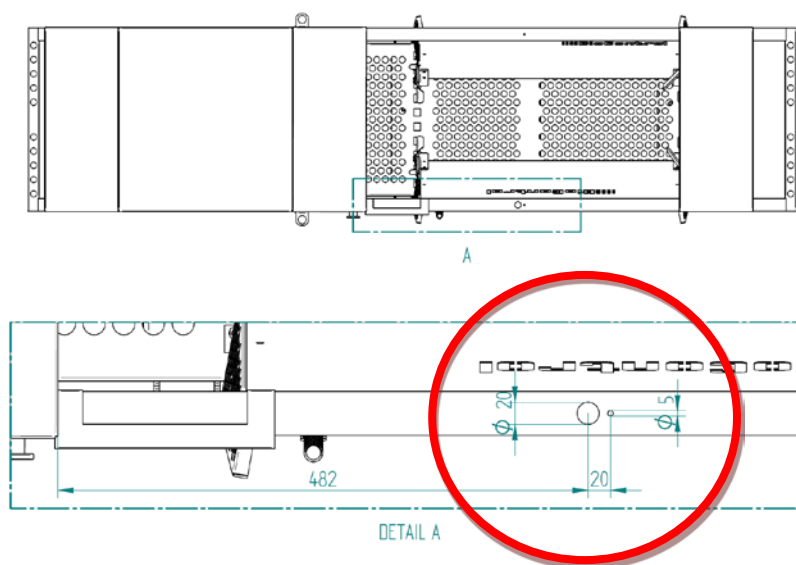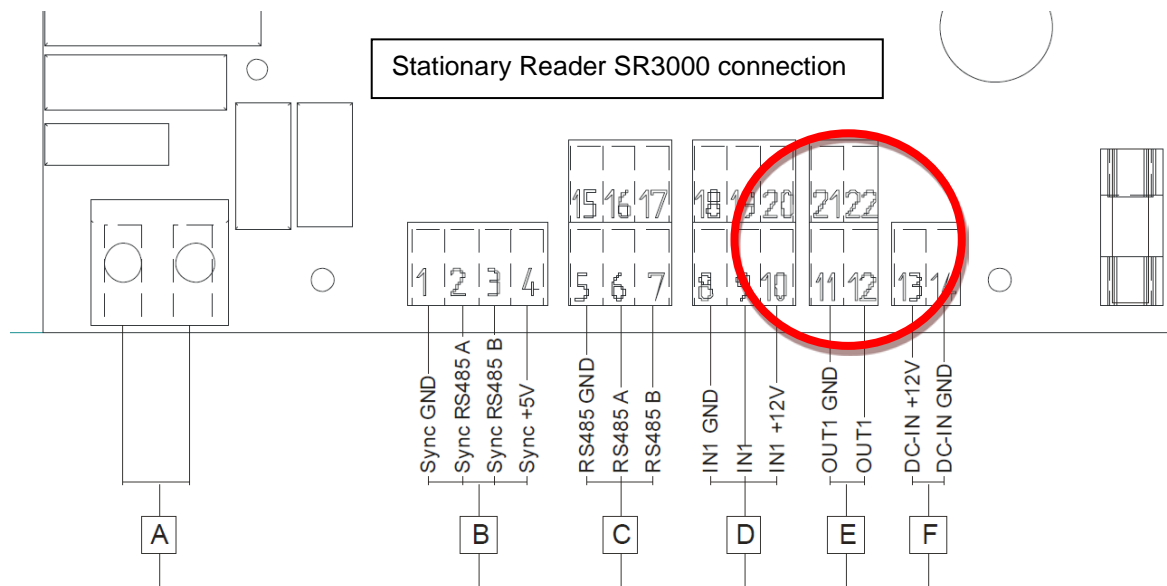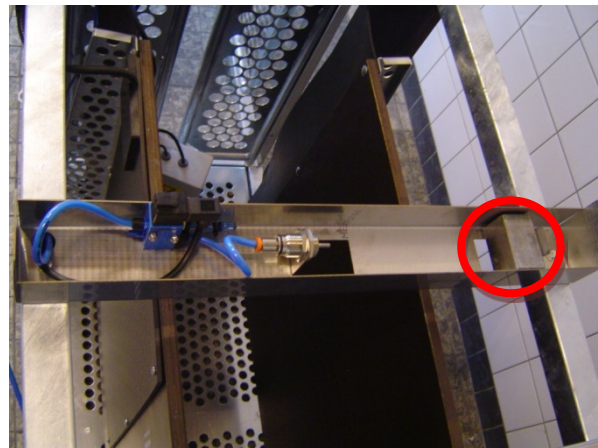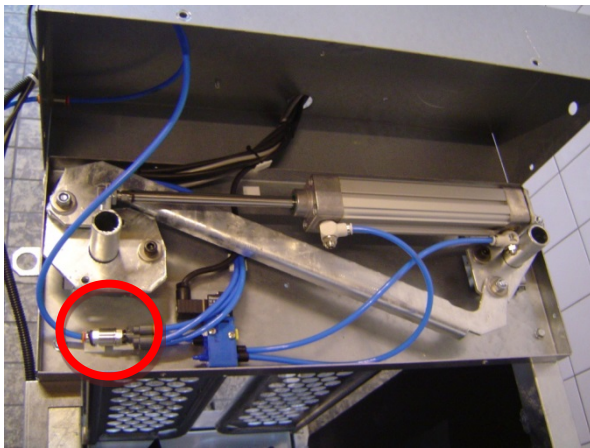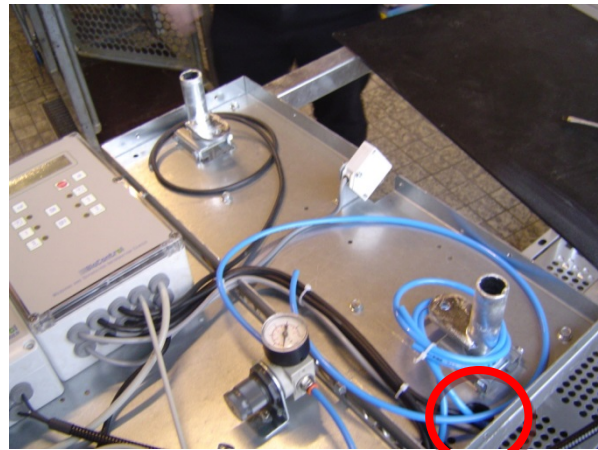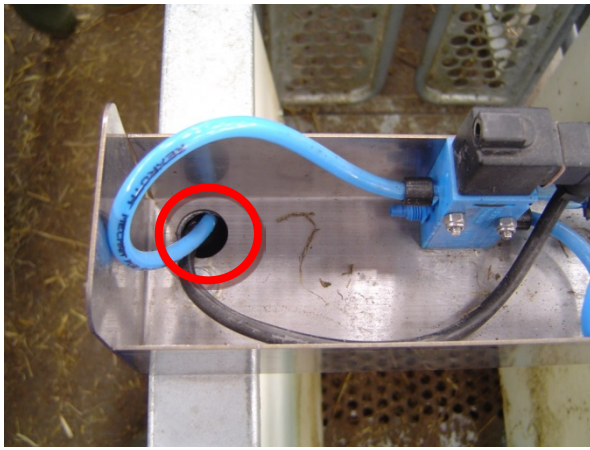
3.5. Spray marker

The Online WSS 3000 can be equipped with max. 2 spray marker. These can be factory installed, but also supplied as kit for retrofitting. This part of the manual explains how to connect and install the spray marker in case of retrofitting.

Spraymarker retrofit package content:
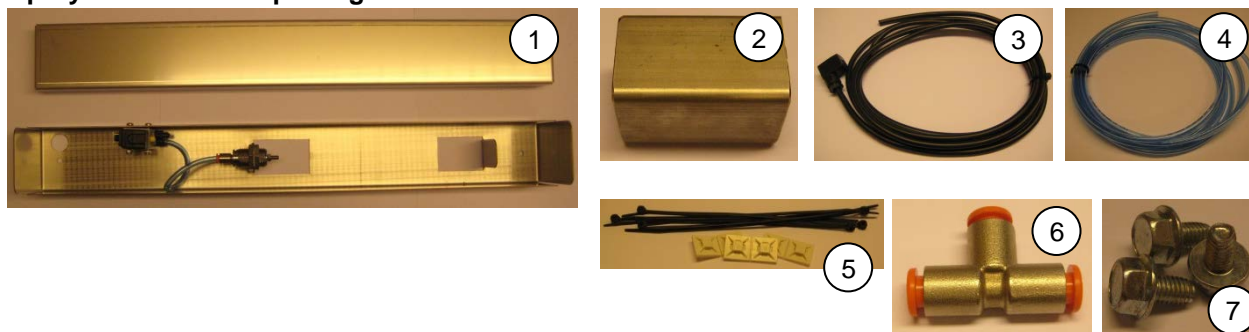
1. Contact your reseller if package is not complete.
2. Mount Spray Marker Unit (1) on WSS. Drill holes in the frame on positions as indicated. Mounting screw = Ø 5mm, cable hole = 20 mm. In case of second spray marker: drill extra holes.
3. Pull valve cable (3) and air tube (4) through cable holes. Connect valve cable to Spray Marker valve.
4. Install air pressure T-Piece (6) in mains tube before air distributor (cut tube to valve and put T-Piece in between). Connect the Spray Marker tube to this T-Piece.
5. Connect the valve cable to the Stationary Reader. Spray Marker 1: pin 11 and 12; Spray Marker 2: pin 21 and 22. Check with SR Documentation.
6. Secure all cables and tubes with tie-raps and anchors (5).
7. For 400 ml. cans: use the 40x40x2 mm square tube (2). This tube not necessary for 500 ml cans.
8. Set Spray Marker settings in PC-program.

Stationary Reader SR3000 connection

Pin	Function	Color	Description
11	Out1 GND	Black	Spray marker 1
12	Out1 +12V	White	Spray marker 1
21	Out2 GND	Black	Spray marker 2
22	Out2 +12V	White	Spray marker 2

4. OPERATION

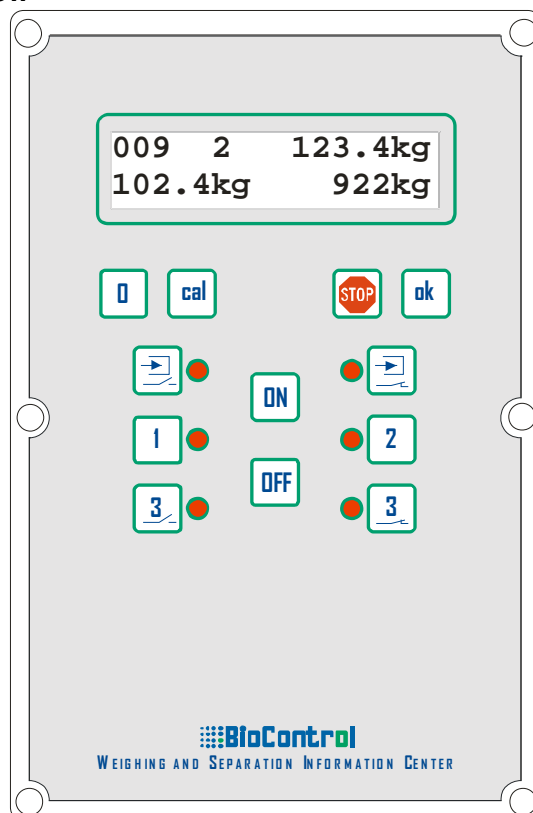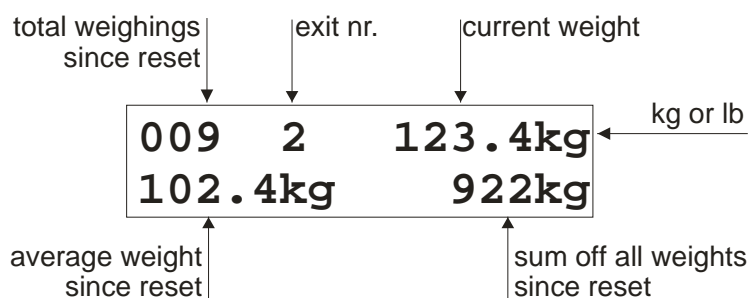### 4.1. WSS Control Unit overview

Figure 1: WSS Control Unit

Figure 2: Display overview

4.2. WSS Control Unit operation, calibration and settings

1. Start-up:
   a. Press key 'On'.
   b. If system was already tarred and calibrated and in mode 'Auto' before powerdown, then that's it. The WSS will resume, you can start working.

2. 'Auto' and 'Stop' mode
   a. WSS starts-up in same mode as before powerdown (WSS-mode is stored in WSS in EEPROM).
   b. Display shows mode in right bottom corner for some seconds after start-up:
      i. 'Auto': WSS is in 'Auto' mode
      ii. 'Stop': WSS is in 'Stop' mode
   c. Press key 'Ok' to change mode.
   d. WSS goes to 'Auto' mode from 'Stop' mode by either
      i. Pressing key 'Ok'
      ii. Initiated by host

3. Tare and calibration principles
   a. Tare and calibration only works in 'Stop' mode
   b. Tare at the beginning of a session to eliminate manure/dirt build-up from the weighing.
   c. Calibrate at installation, or when the platform has moved. Recalibrate when this seems necessary (e.g. temperature).

4. Tare and calibration procedure
   a. Bring WSS in 'Stop' mode.
   b. Empty the platform.
   c. Tare:
      i. Press and keep holding 'Stop' and then press the '0' key without releasing 'Stop'.
      ii. After a few seconds the display will show '0.0'
   d. Calibration:
      i. Put the calibration load (normally 20 kg, check menu 'Calibration') on the platform.
      ii. Press and keep holding 'Stop' and then press the 'Cal' key without releasing 'Stop'. After a few seconds the display will show 20.0 Kg or 19.9 kg.
      iii. Take out the load and the display shall return to 0.0 Kg.
      iv. If it does not return to 0, check the calibration weight in Menu 4 (see 5 below). If the actual weight is too far from the calibration value, adjust the calibration weight accordingly.

5. One time settings (stored in WSS EEPROM)
   a. User-defined settings are done in the set-up menu. This can be reached in 'Stop' mode only.
   b. To enter the set-up menu keep holding 'Stop' and then press the 'Ok' key without releasing 'Stop'. Scroll through the set-up menu's with the 'Ok' key (keep 'Stop' pressed).
   c. Use the '0' or 'Cal' key to change a value. The value is stored when you leave the menu.
   d. Press any gate key to leave the set-up menu.
   e. Some settings are self-explaining (language, lb/kg).
   f. Relevant menus are:
      i. 'Min. weight': minimum weight for WSS to accept the weight as valid.
      ii. 'Time before Push': time before exit gate 'flippers' if animal is caught by exit gate (2-20 sec.).
      iii. 'Calib. Weight': weight used for calibration (see 4 above). For best accuracy, use calibration weight that is in same magnitude as the animal weight.

6. Indications on display
   a. See figure 2.
   b. * is displayed in front of 'current weight' if weight is stable.
   c. ? is displayed on position 'exit nr.' when WSS has not received exit-nr info from host yet.
   d. 'Current weight' shows the real current weight when in 'Stop' mode.
   e. 'Current weight' shows the weight transferred to the host when in 'Auto' mode.

7. Manual gate operation
   a. Is possible in 'Stop' mode.

8. Preventive maintenance
   a. Check that platform can move freely.