



Instruction Manual  
For  
Reward Area fitted to Operant and 5/9 Hole Chambers and  
Monkey Cantab Systems

Model 80210ra with report by door or photo-beam, for food pellet & optional liquid rewards. Fitted for Rat, Mouse & Monkey food only.

Model 80210rax with report by door or photo-beam, for food pellet & dual liquid rewards fitted for Rat & Mouse

Model 80210rax-m with report by door or photo-beam, for food pellet & dual liquid rewards fitted for Mouse only

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## Introduction

The 80210ra, 80210rax and 80210rax-m Reward Areas are standard accessories for the Campden range of 5/9 Hole and Lafayette Skinner and modular test chambers.

The 80210ra Reward Area is mainly intended for feeding pellet rewards for rat, mouse and monkey but has the option of adding a tube and spout for liquid rewards for rat and mouse.

The 80210rax unit has additional specific facilities for feeding liquid rewards to a well in the base for rat and mouse. This allows for dual liquid rewards [for example for taste preference] for rewards to be delivered and withdrawn in conjunction with a dual peristaltic pump system.

The 80210rax-m is similar to the 80210rax in all respects except that it is narrower in width allowing it to be fitted to smaller cages designed for mouse use only.

The units have been designed to complement the Model 80209-xx range of Pellet Dispensers and 80204-x Pumps

Versatility is enhanced by having the facility to be used with or without the door in place and also with the door locked in the open position for training purposes. IR light beams detect either door position or animal activity in the vicinity of the reward recess. When using the photo-beam to detect entry to the reward area the door can be mounted in an alternative position to prevent escape by mouse. See Fig 2. If the door is removed the side pellet entry should be used so that food pellets are not lost through the open door area.

The design also allows access for manual baiting of the reward area.

Illumination of the area is by a pair of high intensity LEDs.

The reward areas are suitable for all pellet sizes up to and including 190mg.

## Operation

The 80210ra/80210rax/80210rax-m Reward Area should be fitted to the chamber using ISO M2.5 screws into the front of the unit. See figures 1, 2 and 3. The screws should not be over-tightened. Where use of the two standard mounting points is not possible, various adapter plates are available.

Connections to the reward area are made via the 4 way terminal block on the edge of the control pcb (see figures 1, 2 and 3 below). A 2.5 mm diameter flat tipped screwdriver will be required.

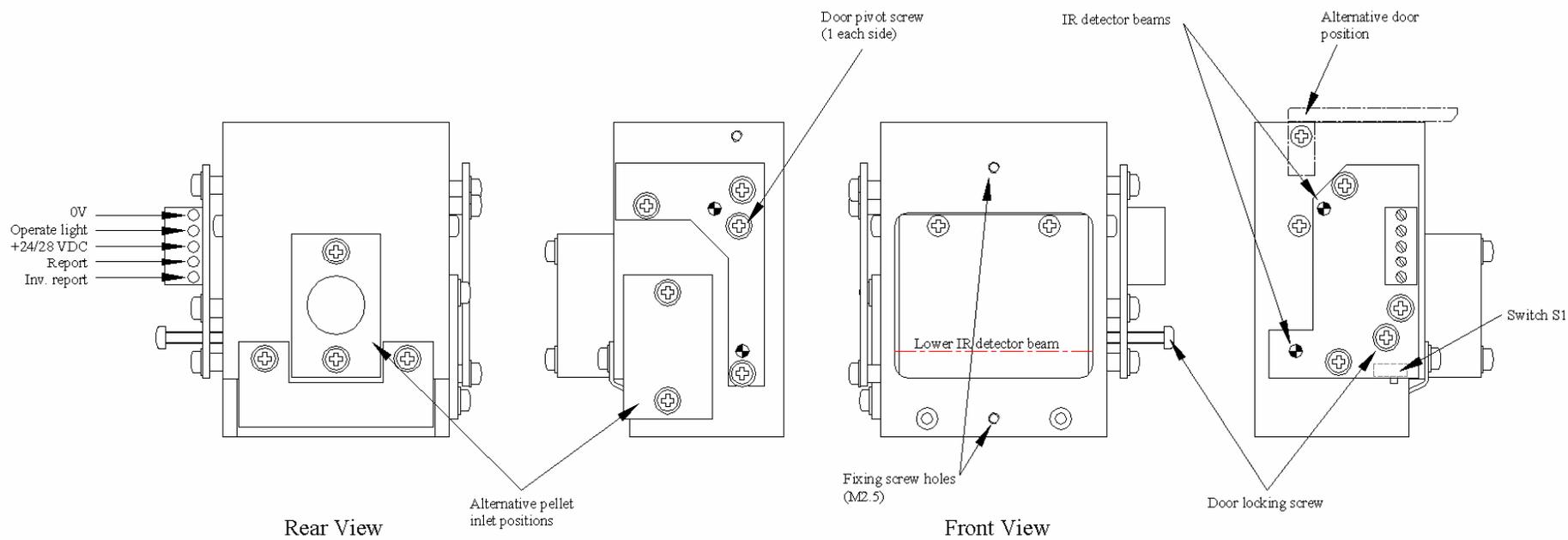
Connections are as follows:

1. 0V (Ground or Common)
2. Operate light
3. +24/28 VDC
4. Report
5. Inverted report

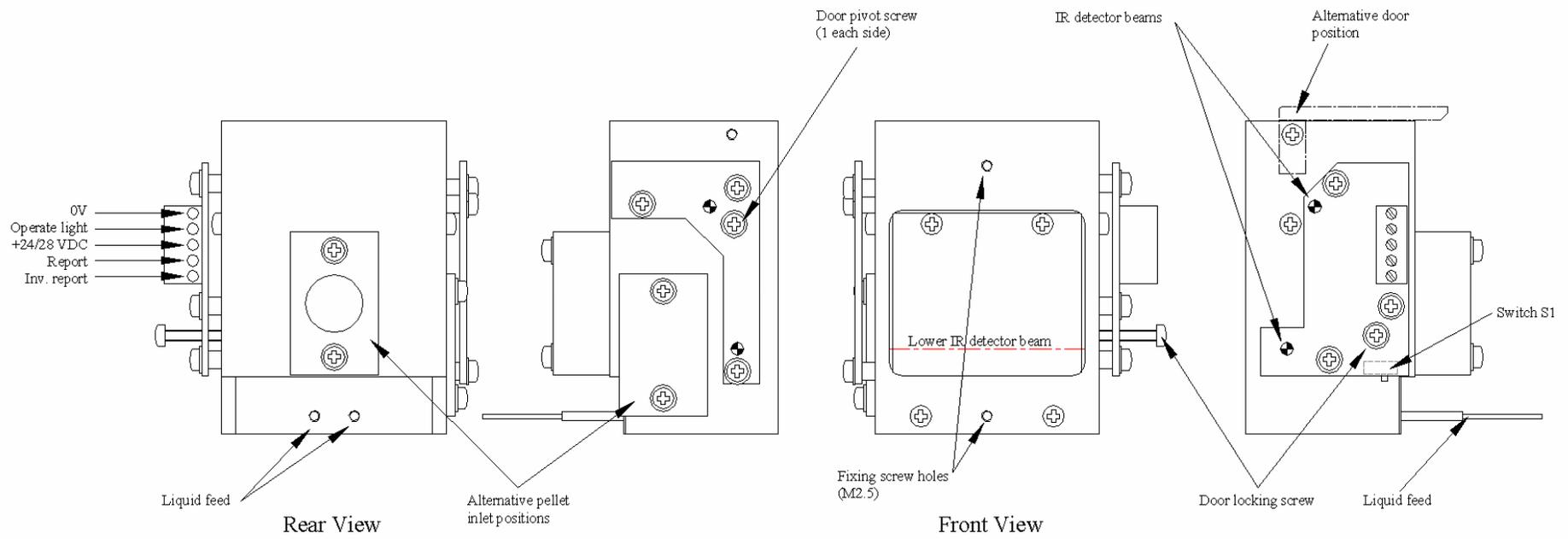
To use the reward area, connect the unit as above.

To operate the reward area light, connect the Operate light terminal to Ground (0V).

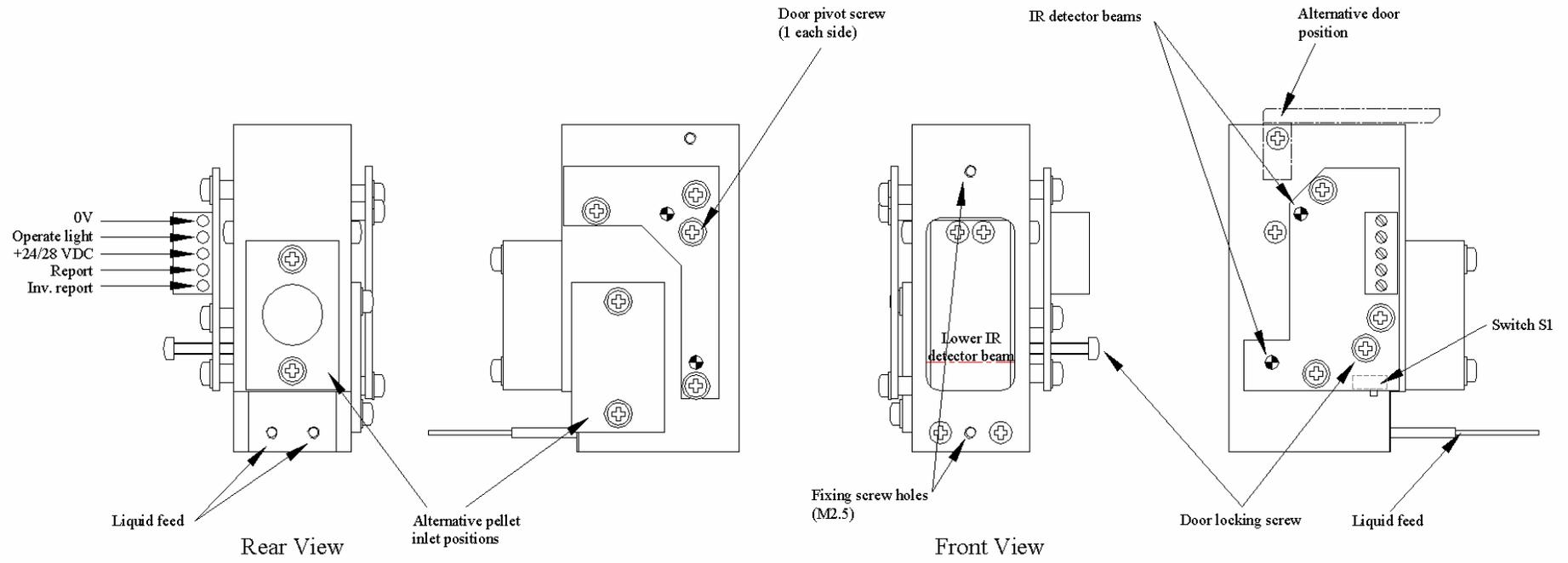
The report line will go low if either the door is opened or a low level nose poke is detected depending upon how the report facility has been configured – see below, Configuring the door.



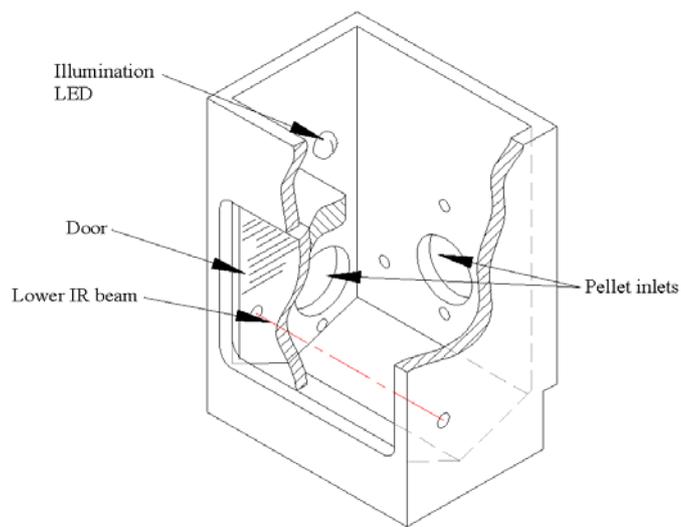
**Figure 1 General layout of Reward Area 80210ra**



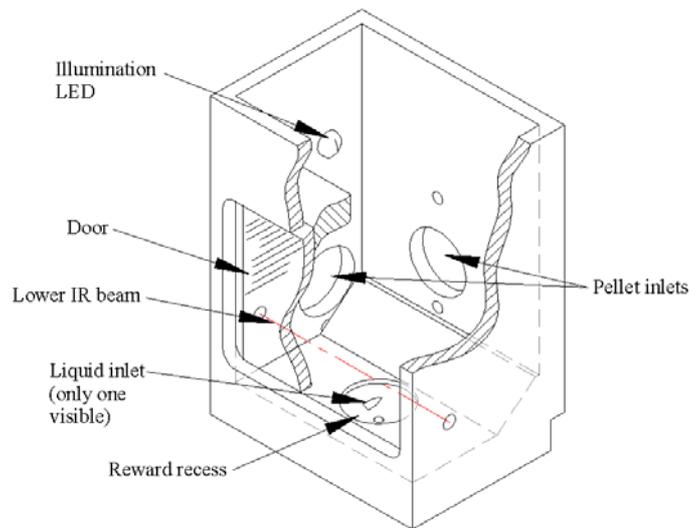
**Figure 2 General layout of Reward Area 80210rax**



**Figure 3 General layout of Reward Area 80210rax-m**



**Figure 4 Cut-away view of Reward Area 80210ra**



**Figure 5 Cut-away view of Reward Area 80210rax & 80210rax-m**

## **Configuring the Reward Area**

The reward area can be configured in various ways depending on the type of reward used and the intended activity. If using Reward Area 80210rax or 80210rax-M, both pellet and liquid rewards can be used at the same time.

### **For use with pellets.**

Pellets can be introduced via the side or rear inlets. The unit is supplied with one standard inlet boss and one inlet blanking plate (two blanking plates with the 80210rax & 80210rax-m). When using

pellets only one blanking plate is required. Depending on your preference and chamber/dispenser layout, mount the inlet boss to either the side wall or rear wall and fit the blanking plate to the other position. Please note however that when the inlet is via the rear wall it will not be possible to feed pellets with the door in the open position.

A suitable feed tube from your pellet dispenser should be inserted into the inlet boss. Take care not to kink or bend the tube too sharply otherwise pellets may jam in the tube and not be fed correctly.

#### **For use with liquid reward.**

For use with liquid reward an additional inlet blanking plate is supplied with the 80210rax/80210rax-m so that the pellet inlet boss can be removed thus eliminating the pellet feed opening.

The 80210ra Reward Area is designed to be used with pellet rewards but can be used with liquid rewards only if the arrangement shown in Figure 6 is used. If this arrangement is to be adopted, an additional blanking plate may need to be purchased.

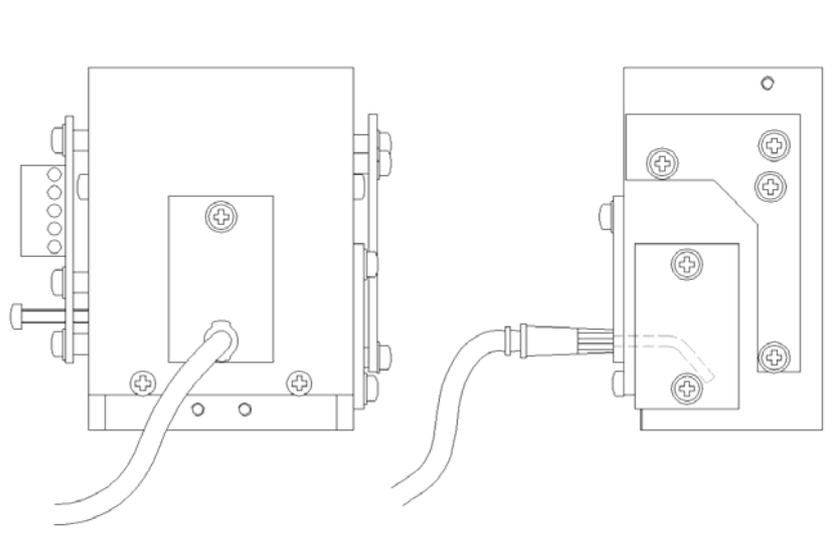
When using liquid rewards with the 80210rax/80210rax-m Reward Area there are several possibilities available.

The 80210rax/80210rax-m Reward Area has two liquid feeds that can deliver liquid into the reward recess, see figures 2 and 3. Each liquid feed is arranged as a fixed stainless steel tube and a loose inner feed tube. The inner tube has a slight bend at one end that allows liquid to be fed into the reward recess. The inner tube can be removed from the fixed sleeve simply by firmly pulling it out. When refitting it ensure correct angular orientation of the bend so that the tip of the tube is visible in the small outlet hole in the reward recess.

The inner tube should have its outer end connected to the Model 80204 (peristaltic) pump by flexible silicon tubing of 0.6mm bore.

Either or both feed tubes may be used enabling the possibility of presenting a choice of reward or the reward to be presented and withdrawn after a defined period of time. If both feed tubes are used, then each will need it's own pump attached.

A further possibility is available: Remove the lower screw from the rear blanking plate. A hypo tube or hypo needle can then be passed through this hole and held in place with a suitable sleeve. The tube can be bent into a suitable spout configuration to allow liquid feed. Take care not to obstruct the operation of the door (if fitted). See figure 6.



**Figure 6 Alternative liquid feed arrangement**

## Configuring the door.

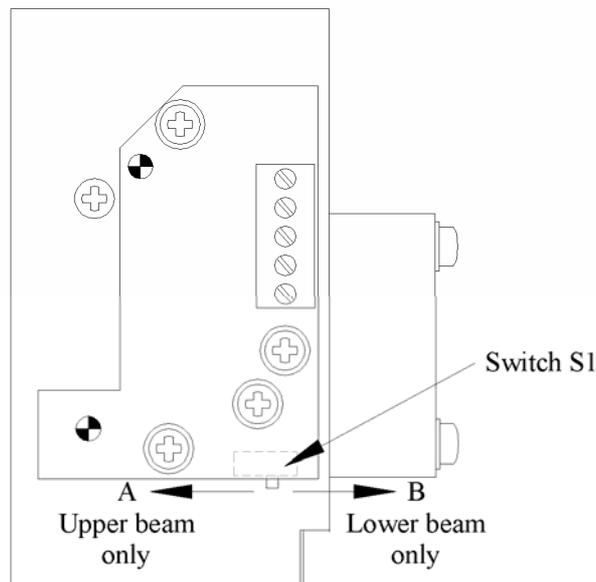
It is possible to use the reward area with the door configured in one of three ways.

1. The door can be left in its normal operating position. When a reward is taken the animal must push the door open to reach the reward.
2. The door may be locked in its open position e.g. for training purposes, but please note that with the door in its open position pellets may only be delivered via the side inlet boss. To lock the door in its open position, push the door fully open and screw in the door locking screw until it is in front of the door, preventing it from closing – see figures 1, 2 and 3.
3. The door may be removed completely. In this instance it is recommended that the door be refitted to the top of the unit to reduce the possibility of escape – see figures 1, 2 and 3. With the door fitted to the top of the unit it will still be possible to open the door to introduce rewards manually through the top of the unit if required.

Two pairs of infrared LEDs and detectors are available to generate the Report signal. The upper beam is used to detect the position of the door whilst another beam situated close to the bottom of the reward opening will detect animal activity close to the reward itself. Depending on the configuration of the door, the IR beams must be correctly configured to enable correct activity reporting. A switch on the control PCB (see figures 1, 2, 3 & 7) determines which beam is active and is used for reporting. If the active beam is broken the Report line will go low.

If the switch S1 on the control PCB (see figures 1, 2, 3 & 7) is set to position A the lower beam will be inactive and reporting will rely on the door being opened.

Please note that if the door is locked in the open position, the report line will be permanently low and animal activity will not be detected unless the IR detection circuit is reconfigured to use only the lower beam.



**Figure 7 Beam selector switch**

If the door has been removed or locked in the open position, the switch should be set to position B. In this position the lower beam is active and reporting will rely on animal activity breaking the beam.

## **Maintenance**

All electrical instruments and equipment should be periodically tested to ensure that they remain safe to use. In some countries this may be a statutory requirement. Your local Health and Safety Executive (or equivalent) will be able to advise on this matter.

The units contain no user-serviceable parts. Contact your dealer or Campden Instruments or Lafayette Instrument Co if you require assistance.

## **Cleaning**

The Report detector operates on an IR light beam principle: all pellets create dust that will settle on the IR emitters and detectors eventually impairing the effectiveness. Regular cleaning of the emitters and detectors with a small brush will dislodge dust accumulations and help maintain efficiency.

Cleaning is especially important when using liquid reward. The inner feed tubes should be withdrawn and thoroughly washed. Clean water should be pumped through the tubes to clean the insides. The outer sleeves may be removed for cleaning by loosening the securing screws in the underside of the reward area base. When refitting the outer sleeve note that the orientation of the chamfered front edge is important to allow the inner feed tube to access the reward recess. The inside of reward area base should be cleaned using a cloth dampened with clean, warm water. Take care not to allow water to reach any electrical components.

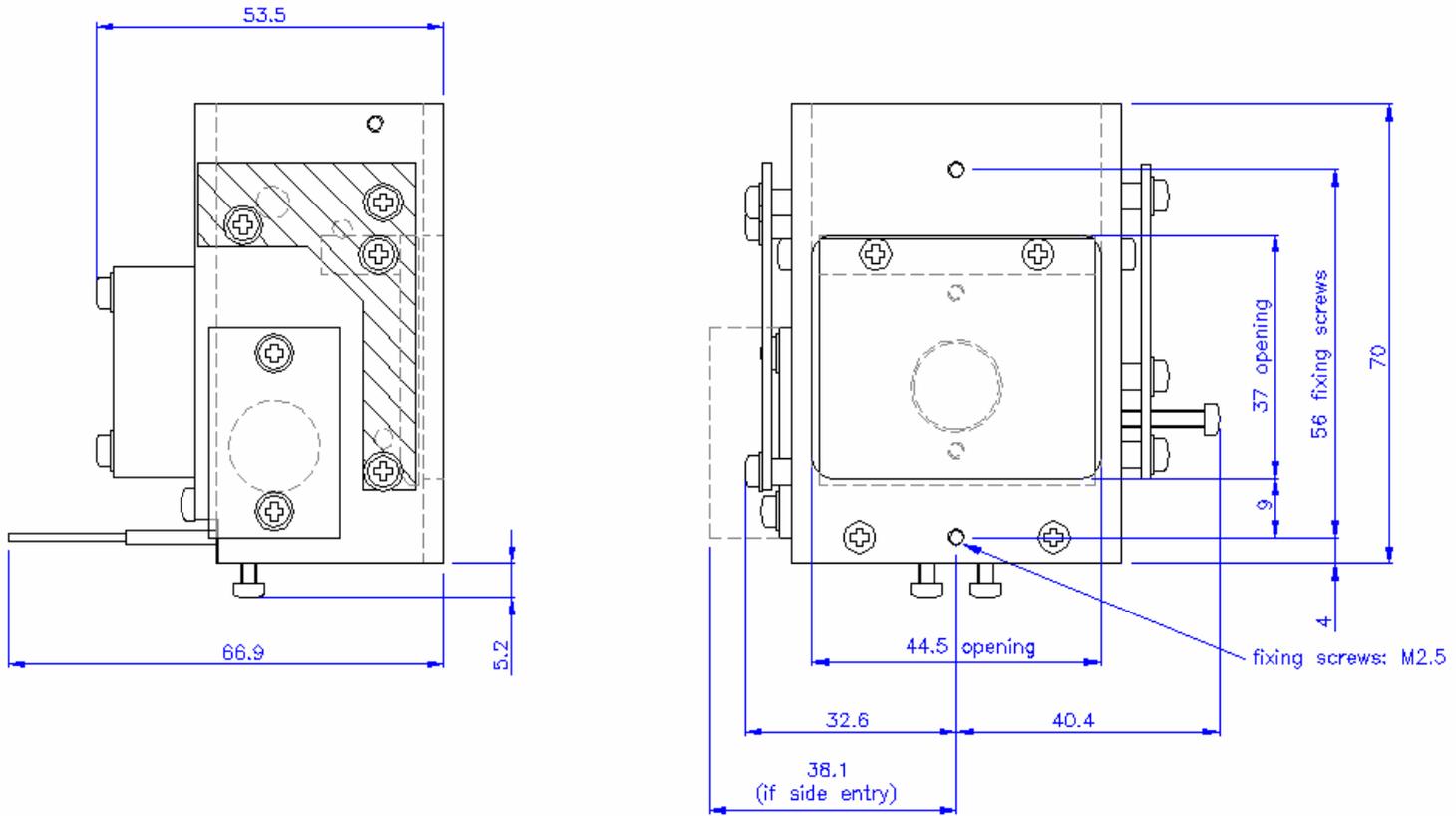
Solvents must not be used to clean any part of the unit.

## **Specifications**

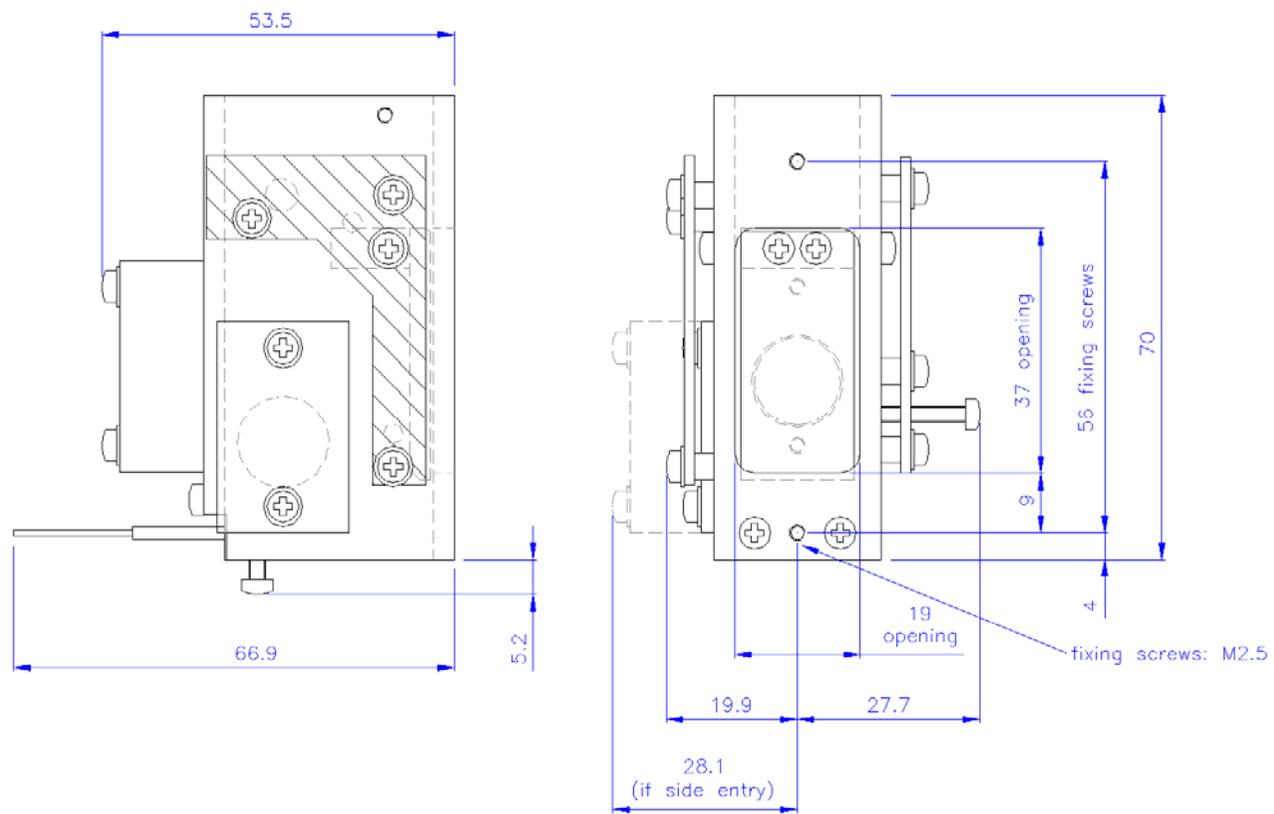
Voltage requirements:	24-28 VDC
Operating current:	70 mA (light on)
Standby current:	20 mA

## **Part numbers:**

80210ra	Reward Area
80210rax	Reward Area with facility for liquid rewards
80210rax-m	Reward Area with facility for liquid rewards for mouse use only



**Figure 8 Overall dimensions 80210ra & 80210rax Reward Areas**



**Figure 9 Overall dimensions 80210rax-m Reward Area**