Campden Instruments Ltd.
A Lafayette Instrument Company

Instruction Manual
For
Retractable levers

Model 4460 for Rat chambers

Model 4461 for Mouse chambers

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Introduction

The 4460 and 4461 Retractable levers are standard accessories for the Campden range of 5/9 Hole and Lafayette Skinner and modular test chambers.
The 4460 lever is intended for rat use and the 4461 is intended for mouse use.

Operation

The 4460/4461 levers should be fitted to the chamber using ISO M3 screws into the front of the unit. See figures 1 and 2. The screws should not be over-tightened. Where use of the two standard mounting points is not possible, various adaptor plates are available.

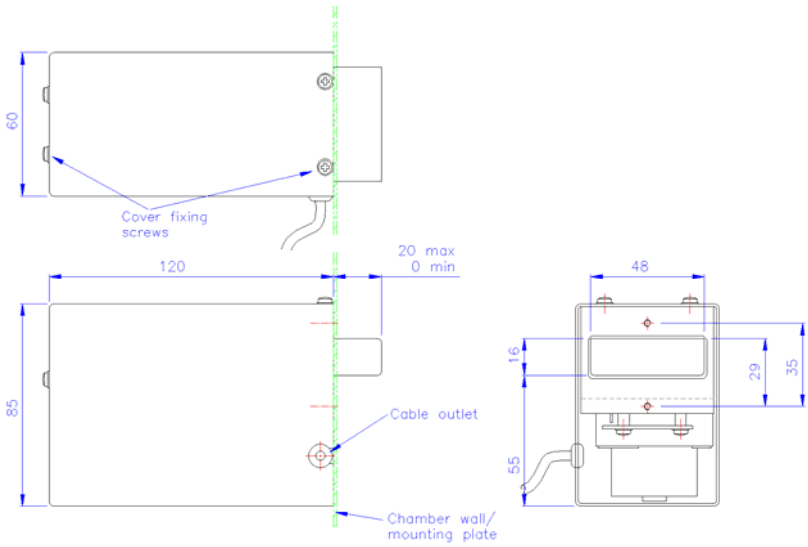

Figure 1 - Overall dimensions of the 4460 Rat lever

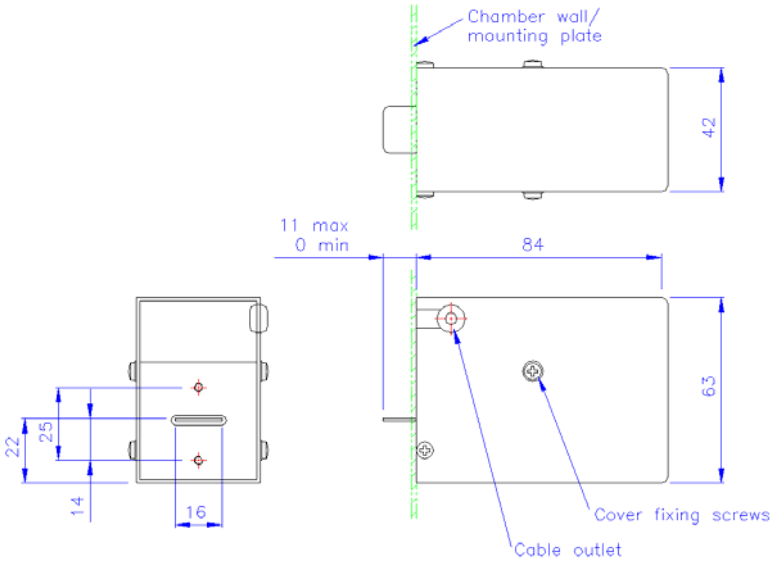

Figure 2 - Overall dimension s of the 4461 Mouse lever

Connections to the lever are made via the 6 way cable in the side of covers – see figures 1 and 2 above.

Connections are as follows:
1. Red Wire – 24-28 VDC
2. Black - 0V (Ground or Common)
3. Blue – Operate
4. White – Lever Press
5. Yellow – Inverted Lever Press output
6. Green - Position

To use the lever, connect the unit as above.
To extend the lever into the chamber, connect the Operate terminal to Ground (0V).
To retract the lever from the chamber, connect the Operate terminal to 24-28 VDC.
A lever press is reported on the lever Press terminal as a logic low signal. An un-pressed lever will report a logic high signal. The inverted lever press terminal reports a lever press as a high signal.
The position terminal indicates the lever position. A low signal reports that the lever is retracted. A high signal reports that the lever is extended.

Adjustment

The operating force required can be adjusted to suit the animals being tested.
To adjust the operating force proceed as follows:
Remove the screws securing the cover.
Adjust the position of the hexagonal counterbalance along its stud as shown in figures 3 and 4 (note that the stud for the rat lever is on the top side of the assembly whilst that for the mouse is on the underside.

Moving the weight - closer to the pivot point reduces the force whilst moving it further away increases the force.

Note that, in the case of the mouse lever, for minimum operating force (maximum sensitivity) the hexagonal counterbalance may be removed completely – in this case the operating force will be between 1 and 2 Grammes; in this instance the lever mechanism must be kept very clean to avoid dirt contamination reducing the sensitivity.

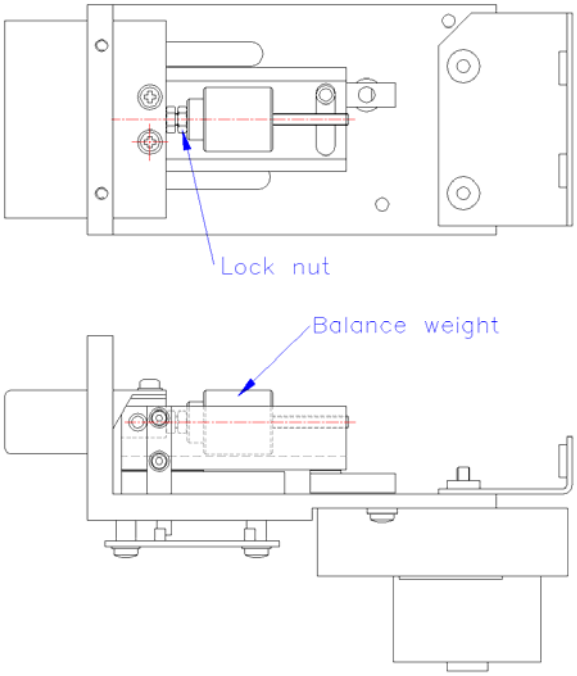

Figure 3 - Rat lever adjustment

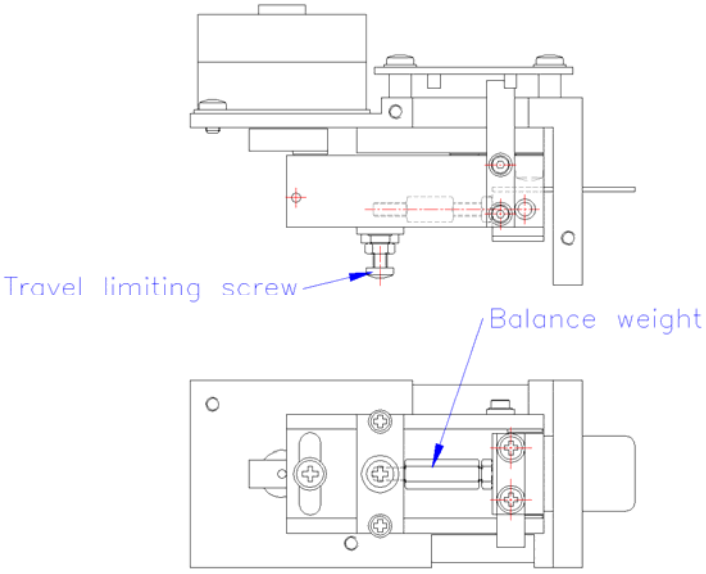

Figure 4 - Mouse lever adjustment

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
Solvents must not be used to clean any part of the unit.
The covers should be removed periodically and any dust or contamination should be removed to ensure maximum operating efficiency of the lever mechanism.

Specifications

Voltage requirements:	24-28 VDC
Operating current:	400 mA (when the lever is moving in or out)
Standby current:	40 mA
Operating force – 4460 Rat lever	9 Gramme minimum 45 Gramme maximum
Operating force – 4461 Mouse lever	2 Gramme minimum 9 Gramme maximum (For the mouse lever, with the weight removed the minimum force will be approximately 1-2 Gramme)

Part numbers:

4460	Retractable lever – Rat
4461	Retractable lever – Mouse