

MIGRO

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By Partech LED Ltd

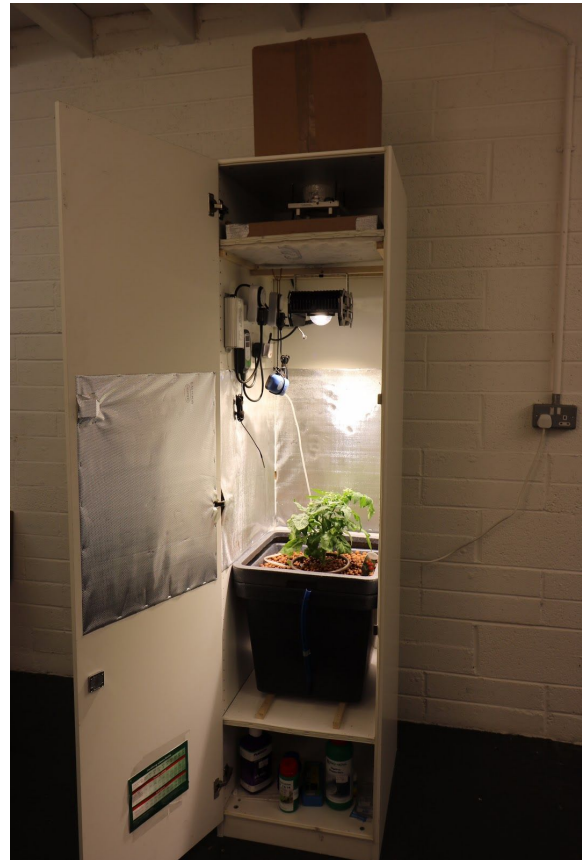
Grow closet/cabinet build instructions

Yield: 90-135 g (3-5 Oz) every 8 weeks

Power consumed: 110 Watts

Grow Cabinet Cost (excl. light): €363 or \$400

Build time: 6 hours



Introduction

This is a set of instructions to build a high performance and high stealth grow closet. The design has been optimised to ensure that the noise and odour levels are kept to a minimum so you can safely grow without detection. If you collect the materials and tools in advance and have basic DIY skills you should be able to construct the closet in about 6 hours.

Youtube instructions to go with this manual

Please see the accompanying playlist of youtube videos titled 'Closet grow light comparison and testing'

https://www.youtube.com/playlist?list=PLACpWuB5ZSIw7ZJHwy7IM_i28cbuqLwR

& 'Grow closet/cabinet build manual'

https://www.youtube.com/playlist?list=PLACpWuB5ZSIJf89ywQE87R_wh3aY2nQWQ

on our youtube channel 'MIGRO' to see the selection of the best equipment and the build instructions for the grow closet.

Capacity and yield

The basis of the design is the globally available IKEA PAX wardrobe. It is a standard depth of 60cm (2ft) which is a common standard for kitchen or utility storage spaces. The resultant footprint of the grow area is 50cm x 60cm or approximately 2ft x 2ft. With a MIGRO 100 LED grow light installed, or one with similar efficiency and light output (PAR, in umols) you can yield up to 135 grams every 8 weeks when growing 1 large autoflower plant in the grow closet. You could reduce this to 5 weeks if you germinate and grow the seedlings in a propagator before planting in the grow chamber.

Noise

The vent axia silent fan and manual filter combination are very low noise compared with the typical fan and filter setup from a grow shop. The hand made filter in this design has a large surface area and very low air resistance. This means the fan can run slower, and quieter, than a typical grow shop setup.

The very low heat emitted from the MIGRO 100 grow light means there is a low amount of hot air to extract to keep the cabinet at the right temperature. This keeps the air movement and noise to a minimum.

The air pump for circulating the water and nutrients is suspended in the closet to prevent noise vibration reaching the outside.

It is worth buying a quality fan like the Vent axia because it will last long and runs much quieter than all others tested. Also, the Vent axia has two speed settings. In the event the fan is not extracting sufficient air at the low speed 'stealth setting' it can be switched to a high speed setting. At the high speed it is not 'silent' any more but the flexibility is there to use it in very hot conditions. Most other budget fans do not have the flexibility of two speeds.

The noise emitted from this grow cabinet when the air pump and fan is on low speed is about the same as from a desktop PC. It is not noticeable a few feet away and definitely not in an adjacent room, even at night.

When the fan is on high speed the noise is about the same as a games console on high demand. You can hear the fan noise in a room but it is not overwhelming and cannot be heard from the next room. The addition of a silencer on the fan outlet (a box on top of the closet) will reduce the high speed fan noise to a barely noticeable level.

Circulation fan?

A lot of grow rooms have circulation fans inside to move the air around and get CO2 to all the plants leaves. In this design a circulation fan is not needed. The fresh air with lots of CO2 is brought in at the bottom of the closet and flows by the plant as it is extracted at the top.

Odour

The hand made filter design is the equivalent of a much larger 150mm diameter, 600mm long cylinder filter, typically used in a much larger growing area. So the filter is very oversized for the space and will keep odours to a minimum during your grow. The lower rates of airflow needed because of the lower heat from the grow light will mean the carbon in the filter will last much longer than if used with a HPS or CFL fixture.

The level of odours can be very intense in the last few weeks of flowering and the carbon filter may not remove all odours from the extracted air. With this design it is possible to run an extract line to a window or to vent to outside using 100mm diameter flexible ducting from the top of the closet.

Light

The grow closet is totally light sealed and no light will be visible at night in a dark room.

Plant pot and growing medium

In this example we have shown an Autopot and the plant in coco pebbles. This is a relatively simple setup and safe to use as the pot has it's own reservoir and should not run out of water quickly and should not overflow.

We have not shown the detail of how to grow in your chosen medium i.e. coco, soil, hydroponics etc. We recommend checking out the 'Everest Fernandez' youtube channel for great guidance on growing in different pots, medium etc.

Materials list

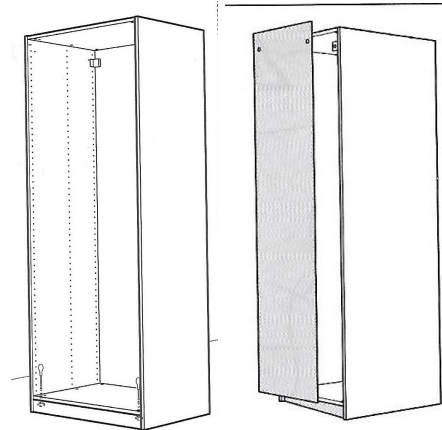
Qty	Part description	Part number/Amazon code	Unit Cost	Total cost
1	IKEA 'PAX' wardrobe 50cm x 58cm x 201cm	IKEA: 702.145.59	€45	€45
2	IKEA 'BAALSTAD' wardrobe doors 50cm x 195cm	IKEA:498.475.68	€18	€36
1	IKEA 'Komplement' hinges, three pack	IKEA:957.191.00	€5	€5
1	IKEA 'Komplement' shelf	IKEA:602.779.86	€7	€7
1	Inkbird ITC-308 Digital Temperature Controller	Amazon: B018K82UQU	€30	€30
1	Vent-Axia Silent Timer Extractor Fan VASF100T 100mm 14dBA	Amazon:B00YEGDN3C	€50	€50
1	Mains extension lead with 5 outputs	Amazon:B000GJCSV4	€15	€15
2	KG of active carbon pellets for the filter	Generic	€6	€12
1	Filter cover from cylinder filter 150mm diameter and 600mm long e.g. CAN 9000PL	55cm x 65cm of material	€9	€9
2	Metres Diamond diffusion mylar foil	60cm x 200cm mylar	€10	€10
1	Aquafarm V3 dripper system (W 450mm x D 450mm x H 450mm) 20L pot	Grow shop	€90	€90
5	Metres of 25mm x 25mm (1" x 1") wooden baton	Generic DIY store	€15	€15
1	2 x Cam Security Lock for Door Cabinet	Amazon:B01HD3GV7W	€10	€10
1	24 Hour Plug-in Timer Socket (3 pack)	Amazon:B001JYG8NO	€15	€15
1	5M length of 'P' type draft sealer	Generic DIY store	€10	€10
1	25cm x 25cm (10" x 10") wall louvre vent	Generic DIY store	€4	€4
1	30cm x 30cm x30cm cardboard or wooden box	Generic	€0	€0
1	Packing foam, egg boxes etc. to line the silencer)	Generic	€0	€0
Total Closet build cost (excluding LED grow light)				€373
1	MIGRO 100 LED grow light 214umols PPFd	M100	€370	€370

Tools list

Qty	Description	Use
1	Electric Drill and drill bits	Drilling holes in cabinet
1	19mm (¾") drill bit	Hole for door locks (2)
1	Jigsaw or 'Job saw'	Hole for vent in top of cabinet, hole in shelf underneath Autopot, hole in rear panel (door) for vent
1	Screwdriver	To screw in wooden batons to the cabinet walls and make the frame for the filter
40	35mm wood screws	To screw in wooden batons to the cabinet walls and make the frame for the filter
10	12mm wood screws	To screw in the louvre, door locks
1	'Gaffer' tape	Sealing the filter cover material to the frame & fixing the mylar to the walls
1	Staple gun (you can use small nails or tacs instead)	To fix the filter cover fabric to the hand made filter frame
1	Sharp blade	To cut materials for the filter. To cut the holes in the cardboard box for the silencer

Assembly instructions

- 1 Assemble the IKEA PAX wardrobe as per the manufacturers instructions but leave the thin hardboard rear panel off. Fit the spare door to the rear of the wardrobe instead.



- 1.1 Fix two wood batons 30cm from the floor on both sides. Make sure they are level.

Fix three wood batons 25cm from the top on the sides and rear. Make sure they are level.

Fix another batton from left to right halfway into the closet to hang the LED light

Mark and cutout a hole for the louvre vent on the rear of the cabinet close to the bottom.



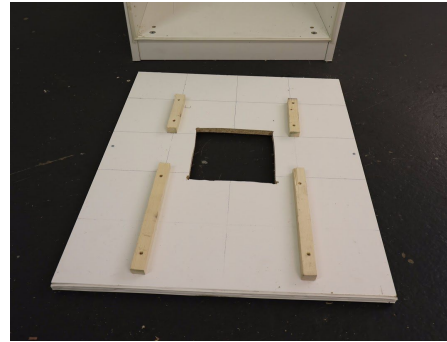
Mark out the centre of the closet top and cutout a hole 5mm larger than the extract fan vent & fit the extract fan.

See the video 'Closet grow build #1 - Fan and filter install' on our youtube channel for full instructions.



- 1.2 Mark out a square hole 15cm x 15cm in the centre of the shelf and cut out.

Add four pieces of baton onto the shelf, spaced 25cm apart, so the Autopot can slide and sit on



- 1.4 Construct the square filter frame for a tight fit into the closet on the top wooden batons. **See the video 'Closet grow build #1 - Fan and filter install' on our youtube channel for full instructions.**

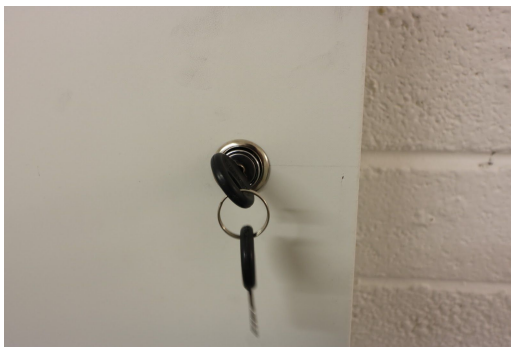
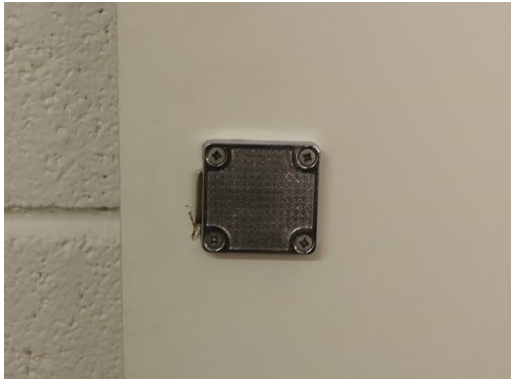
- 1.5 Fit the filter into the top shelf fixtures and fit the Autopot shelf onto the lower batons



- 1.6 Install the 'P' type seal around the front edge of the closet



- 1.7 Fix the three hinges to the IKEA door & fix the two locks to the door front. Space them equally along the height of the door



- 1.8 Fix the receivers for the door locks to the side walls of the cabinet at the same height as the locks. Keep the straight edge of the receiver 3mm from the edge of the cabinet to allow the door to lock with the seal on the outer edge.



- 1.9 Drill a hole in the rear of the closet at high level and feed the extension lead cable through and fix the multi socket block to the side wall



- 2.0 Fit the LED driver, thermostat control, timers for the light and pump and the air pump to the side wall of the closet.



- 2.1 Fit the door to the closet and adjust the door hinges and locks so that the door closes firmly on the seal around the edges



- 2.2 Install the Autopot onto the shelf. **To setup the autopot please see the video instructions on the playlist on our Youtube channel**
https://www.youtube.com/playlist?list=P_LACpWuB5ZSIJf89ywQE87R_wh3aY2nQWQ



- 2.3 Line the closet with diamond mylar from the top of the pot to underneath the light.



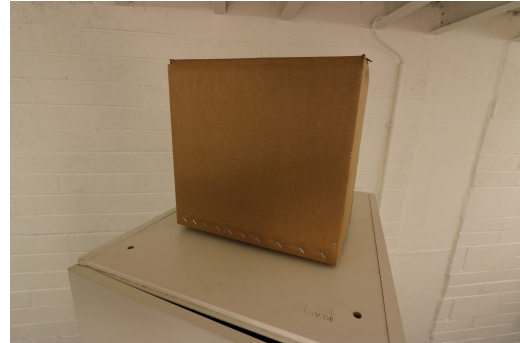
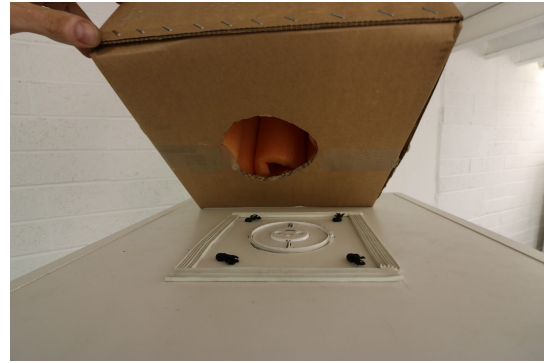
- 2.3 To make the fan silencer cut two 12cm circular holes in the centre of two opposite ends of the 30cm x 30cm x 30cm cardboard or wooden box.



- 2.4 Fit some packing foam sheeting, egg boxes or sound proofing material into the box but keep a clear space between the two holes for the air to flow through



- 2.5 Fit some of the edge draft sealing strip around the vent hole at the top of the closet.



The silencer can sit on top of the vent hole and will reduce the air noise from the fan

- 2.6 You're finished the installation!!!

Time to setup the equipment. Commission as follows:

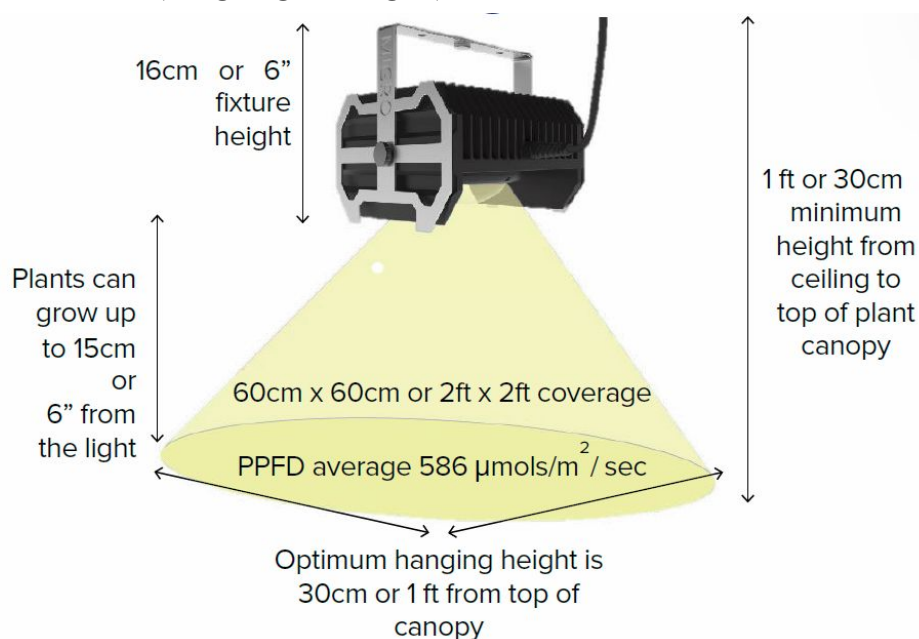
- I. Set the timer for the lights (18 hours on 6 hours off for autoflowers) and pump (manufacturers recommended cycle))
- II. Set the target temperature for the grow closet on the Inkbird to 27deg C. Set the temp range for 2deg C.
- III. Commission the Autopot system according to the manufacturers instructions
- IV. Put your plant in the growing medium. Charge the system with nutrient mix.
- V. Switch the power on and test the light, fan and pump function.
- VI. Get growing

If you have any suggestions, changes or see any faults with this manual please contact us at info@migrolight.com and we will update as appropriate

Please share this freely

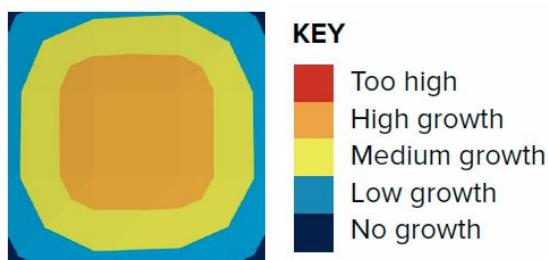
How to optimise your grow light setup

MIGRO 100 (single grow light)



0.6M x 0.6M PAR intensity map

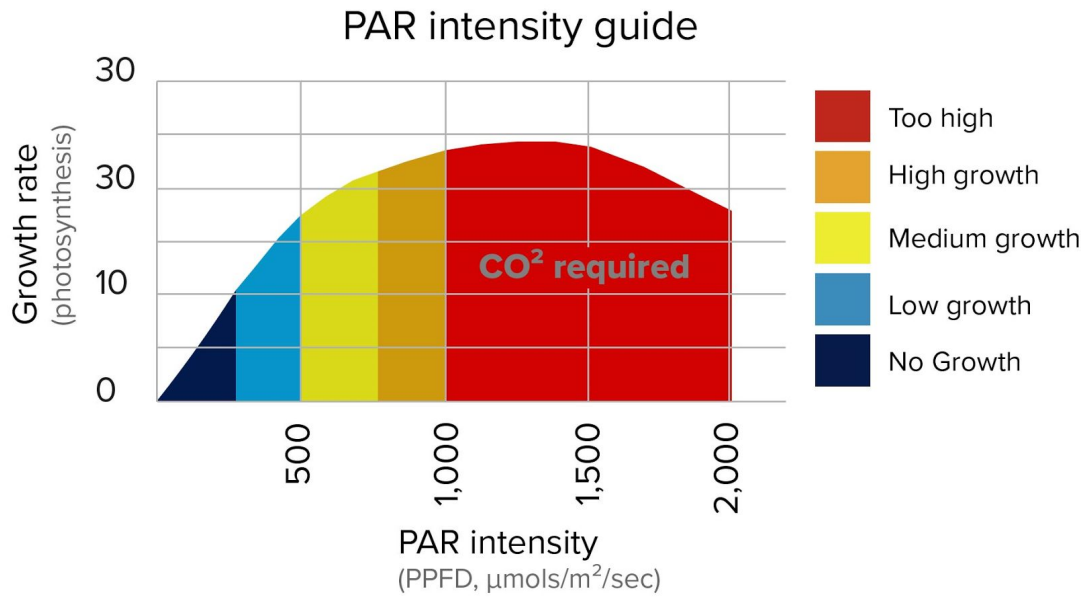
Flowering coverage:
60cm x 60cm or 2ft x 2ft
Light intensity: 568 $\mu\text{mol}/\text{m}^2/\text{sec}$



How much light plants need for maximum yield

To optimise your grow it is recommended that your plants receive 500-1,000 μmol of PAR light for every m^2 (PPFD). Less than this and growth rates and yield will be low.

Growth rates at higher PPFD levels do not justify the extra energy cost and heat output and the plants require additional CO_2 to utilise the high PAR intensity.



Contact for technical support

Email: info@migrolight.com

Website: www.migrolight.com

Youtube: MIGRO channel - optimise your grow light setup

Telephone: 00 353 (0)1 8245716