



THE DEWPOINT CABINET



Cabinet Serial Number:

Please retain these instructions as the Serial Number provided is unique to your Dewpoint Cabinet.

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Registered in England No. 3541142 Established 1975

INTRODUCTION

The Dewpoint Cabinet is a completely self-contained unit only requiring connection to mains electricity. It will provide the ideal environment for the germination of seeds & the fast rooting of cuttings. It can be run continuously - throughout the year if required - & needs only the minimum of maintenance.

The principle of the Dewpoint (which is protected by patent no. 1341958) is that fresh air saturated with water vapour is allowed to cool round the leaves of cuttings & plants, never allowing them to dry out; thus encouraging healthy root growth.

The Dewpoint Cabinet measures approximately 48" long by 24" wide & will accommodate six standard seed trays. A thermostatically controlled heating tray warms a reservoir of water through which is pumped fresh air which becomes saturated. Just above the water reservoir is a mesh onto which the subjects are placed. The thin aluminium sides of the cabinet cool the air producing 'the dewpoint' - condensation on the sides run back into the reservoir. The top of the cabinet is sealed with three pieces of removable acrylic above which are mounted two fluorescent fittings producing some 3000 lumens. All the electrical equipment is run through a time clock which allows you to set 'artificial nights' as well as 'days'. When the clock is off a small amount of power is fed to the heating tray to maintain the dewpoint.

The Dewpoint Cabinet will work anywhere under cover where the temperature does not become excessive - a garage, cellar or box room are quite suitable but NOT a greenhouse or conservatory.

The Dewpoint Cabinet is supplied in kit form with detailed assembly instructions although you may prefer a qualified electrician to make the final electrical connections. The lighting lid simply lifts up allowing clear access - to fill the water reservoir & position your seed trays. Then plug in, set the time clock & leave the rest to the Cabinet. About every two weeks check the water needs - it may be necessary to soak the seed trays. Maximum power consumption is about 250 watts (approx. 1½p per hour or ¾p on Economy 7).

In the Dewpoint Cabinet plants have no means of telling what season or time of day it is so, for example, heather cuttings frequently flower one or two months after they are taken & seed may be started into rapid growth at any time. For woody plants the lights can be left on 24 hours a day, whereas for soft plants such as Saintpaulias, Orchids & Tomatoes should have at least 8 hours of darkness for best growth.







To sum up, with the Dewpoint Cabinet:

- There is no need for a greenhouse, water supply, sunlight or heat - only an electrical supply.
- Propagation can continue all the year round (Rhododendron seedlings put on 3 years growth in just 9 months).
- Very little 'weaning' is required - plants rooted in 3 weeks can be potted up & put outside.
- Winter dormancy can sometimes be broken very quickly (2-3 weeks).
- It can be used to revive flagging plants or for raising specialised species.
- Completely trouble-free to run - no jets to block or solenoids to stick & no build up of alkalinity.

If you have any further queries, please don't hesitate to ring either Peter Bennett (01246 572400) or John Boulton (01246 572404).

COMPONENTS


Cabinet

Code	Description	Profile	Size	Qty
A	Back Corner Legs	 Corner Extrusion	1220mm	2
B	Front Corner Legs	 Corner Extrusion	1067mm	2
C	Length Horizontal	'T'	1189mm	4
D	Width Horizontal	'T'	536mm	4
E	Heated Tray		1170mm x 530mm	1
F	Infill Side Strip	 Sheet	1189mm x 48mm	2
G	Infill End Strip	 Sheet	536mm x 48mm	2
H	Joining Strip	 Grey 'H' Strip	1141mm	2
I	Joining Strip	 Grey 'H' Strip	490mm	2
J	Back Panel	White Sheet	1205mm x 300mm	1
K	Front Panel	White Sheet	1205mm x 148mm	1
L	End Panels	White Sheet	548mm x 150/300mm	2
M	Retaining Bar	Sheet	1193mm	1
N	Soft Foam Sealing Strip		7m	1
P	Lower Tier Tray	Aluminium Tray	1185mm x 530mm	1
Q	Acrylic Panels		400mm x 542mm	3

Hood

Code	Description	Profile	Size	Qty
HA	Lighting Hood with Fittings	Sheet		1
HB	Lighting Hood Supports	'T'	565mm	2
HC	Lighting Hood Hinge	Hinge	1192mm	1
HD	Lighting Hood Hinge Support	'T'	1192mm	1
HE	Lighting Hood Support Hinges			2

Reservoir

Code	Description	Profile	Size	Qty
RA	Plastic Water Tray			1
RB	Mesh Support Slats		1039mm	2
RC	Subject Support Mesh		1130mmx 460mm	1

Air

Code	Description	Profile	Size	Qty
	Air Pump			1
AA	Air Pump Brackets			1
AB	Black PVC Air Tube		4mm	0.8m
AC	Perforated Air Tube		4mm	3.5m
AD	Tube Elbow Connector		4mm	1
AE	T Connector		4mm	1
AF	Grommet		8mm	1

Control

Description	Qty
Control Box with Thermostat & Timer	1
Heyco Clip	5
Control Box Mounting Brackets	2
3 Core Cable	2m
3 Pin Plug	1

Fixing

Description	Qty
Square Head Bolts & Nuts	38
Mushroom Head Bolts & Nuts	26
7/16" Cropped Head Bolts & Nuts	2
10mm Bolts & Nuts	6
Plastic Flanged Washers	4

ASSEMBLY INSTRUCTIONS

We recommend you read through all the assembly instructions carefully & check all the components before you begin to assemble your Dewpoint Cabinet.

(1) The Main Frame

(i) Decide at what height you wish the lower shelf to be at, then mark all four corner legs (A & B) with this measurement so that you know where to position the horizontal bars (C & D).

(ii) Take the two back corner legs (A) & attach two lengths horizontal bars (C), one for the lower shelf & one for the upper tray support. This upper horizontal bar **MUST BE** positioned so that it is 610mm clear from the ground.



Figure 1

To attach the horizontal bars slide sufficient square head bolts down the channels in the corner legs (2 per shelf) – as shown in figure 1.

Line up the horizontals with the marks you have made on the corner legs & slide the bolts to match up with the holes in the ends of the horizontals – as shown in figure 2.

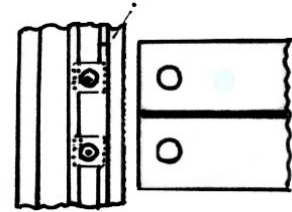


Figure 2

Locate the horizontals on the bolt stems & fasten with the nuts.

(iii) Square up & tighten.

(iv) Take the two front corner legs & repeat processes (ii) to (iii) above.

(v) Join the rear & front sections using the width horizontals (D). Position the slot at each end of the width horizontals (D) over the flat part of the length horizontals (C) then slide the width horizontals onto the bolt stems of the square headed bolts you have positioned – as shown in figure 3.

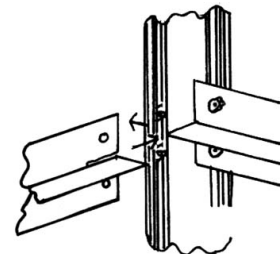


Figure 3

(vi) Square up & tighten.

The Main Frame is now complete.

(2)

Place the heated tray (E) into the top of the main frame, with the power cable facing downwards so that it is in the back right hand corner. The heated tray is supported by the horizontals (C & D).

(3)
Position the four grey 'H' shaped joining strips (H & I) onto the top edges of the horizontals (C & D), with the longer leg of the joining strip to the outside – as shown in figure 4.

(4)
Position the infill strips (F & G) into the top of the joining strips (H & I) with the smaller leg of the joining strip to the inside – as shown in figure 4.

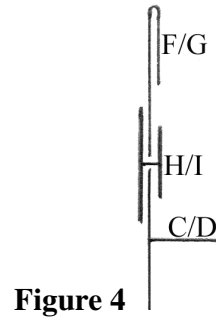


Figure 4

(5)
Having positioned the infill strips you have now created a recess into which you can place the large plastic water tray (RA), which will rest on the heated tray.

(6)
To the top edges of the plastic water tray (RA) apply the soft foam sealing strip (N) by removing the backing at one end & carefully fixing to the edge of the tray, removing the remainder of the backing as you go.

(7)
N.B. Before installing the white painted panels remove the clear/blue protective films.

(i) Position the white painted back panel (J) down between the back corner legs, with the 90° bottom bend resting onto the soft foam sealing strip & the white surface on the inside.

(ii) Position the front panel (K) between the front corner legs in the same manner.

(iii) Position the two end panels (L) (left & right hand) between the back & front corner legs (A & B) on the INSIDE of the turned ends of the back & front panels (J & K) – as shown in figure 5.

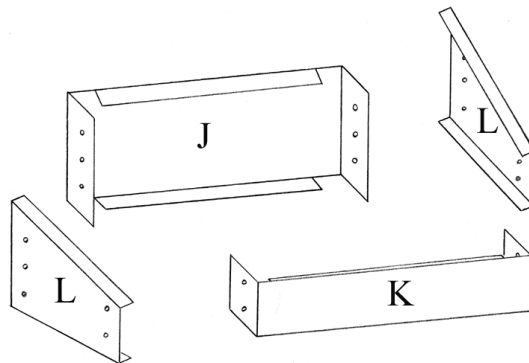


Figure 5

(iv) Using 3/8" mushroom headed bolts bolt the panels together, finger tight, making sure all the panels are pushed back to the inside of the corner legs, then tighten up the bolts & nuts.

(v) Apply the soft foam sealing strip (N) all the way around the top turned edges of all four panels (right at the leading edge).

(8) The Retaining Bar

In between the front corner legs (B) & the front panel (K) insert the retaining bar (M). Push the retaining bar down fully & bolt into place, inserting a cropped bolt through the slot in the retaining bar (M) into the front corner legs (B), twist & tighten with a nut – as shown in figure 6.



Figure 6

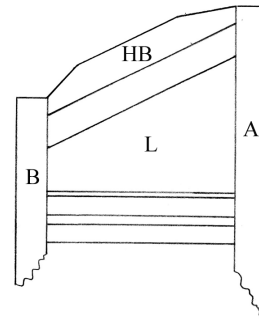


Figure 7

(9) Hood Support Rails

Attach the hood support rails (HB) using the square head bolts & nuts - secure the hood support rails (with the cropped corners uppermost) so that the edges finish flush with the top of the corner legs – as shown in figure 7.

These rails support the hood when it is in its down position.

(10) The Lighting Hood

(i) Attach the lighting hood hinge support (HD) to the back corner legs (A) so that it is 3mm proud of the top of the legs, with the edge with five holes uppermost – as shown in figure 8.



Figure 8

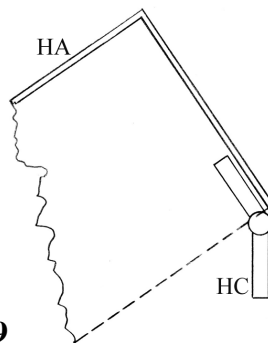


Figure 9

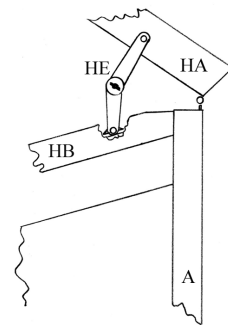


Figure 10

(ii) Bolt the side the lighting hood hinge (HC) with the cropped out corners to the top edge of the lighting hood support (HD) – as shown in figure 8.

(iii) Bolt the back edge of the preassembled lighting hood (HA) to the lighting hood hinge (HC) – as shown in figure 9.

(iv) fix the hood support hinges in place – the top arm via a single round head bolt & nut with nylon washers to the single hole in the side of the hood, the lower arm bracket to the two holes in the inward facing fin of the lighting hood supports (HB) – as shown in figure 10.

This Lighting Hood will be connected to the control box later.

(11) The Lower Tier Tray

The lower tier tray (P) can now be placed into position in the main frame.

(12) The Air Pump & Bracket

Attach the air pump bracket (AA) to the hole in the in the right hand end lower edge of the lighting hood hinge support (HD) support. Insert the air pump – this will be connected to the control box later.

(13) Air Pump Installation

- (i) Put the rubber grommet (AF) into the lower of the two holes in the back panel (J).
- (ii) From the inside push the tube elbow connector (AD) through the grommet & connect the leg of the connector on the outside of the cabinet to the air pump with a length of the black PVC air tube (AB).

(14) Air System Installation

- (i) To the inside leg of the tube elbow connector (AD) attach a length of black PVC air tube (AB) to reach to the base of the plastic water tray (RA).
- (ii) In the end of the black PVC air tube (AB) insert the 'T' connector (AE).
- (iii) To the other 'legs' of the 'T' connector connect length of the perforated air tube (AC) in a continuous loop, snaking it around the base of the plastic water tray.

(15) Inside The Water Tray

With the perforated air tube (AC) in the base of the plastic water tray, position the two mesh support slats (RB), one at the front & one at the back of the tray. Over these mesh support slats place the subject support mesh (RC) – as shown in figure 11.

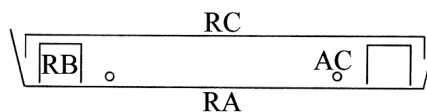


Figure 11

(16) The Control Box

- (i) Remove the cover of the control box.
- (ii) Attach the mounting brackets to the back of the control box, this will later attach to the two remaining holes in the lower edge of the lighting hood hinge support (HD).

(17) Wiring The Control Box

Having removed the lid of the control box you will be able to see four sets of terminal blocks, clearly marked with terminal names, plus a three point terminal block for the earth wires.

- (i) Take the 6' of 3 core cable supplied & attach it to the MAINS terminal block; with the NEUTRAL (blue) wire to the point marked N & the LIVE (brown) wire to the point marked L. finally attach the EARTH (green & yellow) wire to one of the earthing points.
- (ii) Repeat this process for the lighting hood & heated tray cables.
- (iii) The air pump has only to be connected to its marked terminal block via its LIVE & NEUTRAL cables.

N.B. IN ALL CASES ATTACH THE BROWN WIRE TO LIVE 'L', THE BLUE WIRE TO NEUTRAL 'N' & THE GREEN/YELLOW WIRE TO THE EARTH 'E'.

- (iv) Attach the heyco cable clips to the four cable leads – this is to prevent the cable from pulling out of their connections. This is done by placing a clip on the appliance & mains cables as close to the outside of the case as possible, with a pair of pliers nip the clip & push it into the hole in the case. Release the

hold on the clip & the cable will be securely held (look how the one holding the temperature sensor cable is fitted – this is the thin brown cable which is already wired) – as shown in figure 12.

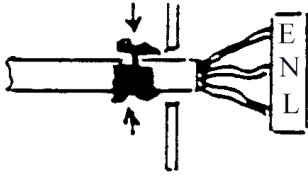


Figure 12

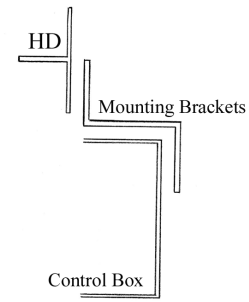


Figure 13

(v) Feed the temperature sensor through the remaining hole in the back panel (J) & secure with a heyco cable clip as described in (iv).

(vi) Fix the control box mounting brackets to the outside rear of the control box – as shown in figure 13.

(vii) Bolt the bracket & box to the lower fin of the lighting hood hinge support (HD) – as shown in figure 12.

(viii) Replace the control box lid & retaining screws. Turn the temperature set 'stems' as far as they will go in a clockwise direction & replace the control knobs so that the dot on the knobs is pointing to the * on the scales. Tighten the small retaining screws.

(ix) Attach a three pin plug 3 amp) to the mains cable (brown to live 'L', blue to neutral 'N' & yellow/green to earth 'E').

(18)

Fill the plastic water tray (RA) with water, level with the top of the mesh support slats. From experience very little water is lost out of this tray during normal running but should be checked every two weeks.

Your Dewpoint Cabinet is now complete & ready to operate.

OPERATION INSTRUCTIONS

Plug the control box into your mains electricity supply, switch on & the red 'mains-on' light will show.

Clock Operation of The Dewpoint

Follow the instructions enclosed within the control box to set the clock.

When the clock is 'on' the lights, air pump & heating element will be operating. The temperature is controlled by the top 'DAY' knob (when the heater is on the amber 'HEAT ON' light will show).

When the clock is off, the only appliance working will be the heating element which will then be controlled by the lower 'NIGHT' knob.

For normal operation of the Dewpoint Cabinet only a small amount of NIGHT heat is required to maintain the dewpoint (the inside slightly warmer than the outside). Higher night temperatures however may be needed when you wish to use the cabinet solely to germinate seeds.

Hints on the use of The Dewpoint Cabinet & Siting.

Anywhere under cover where the temperature does not become excessive (i.e. too hot, too cold or too variable) e.g. a garage, cellar, box room etc. NOT in a greenhouse or conservatory.

Stand slightly away from a wall to allow good air circulation around the cabinet.

Operation

Once the time programme has been set for the subjects in the cabinet very little maintenance will be needed. Check the water requirements every two weeks or so & then you will probably find that only the seed trays will need a little water.

Time Programme

It is usual to set a 16 hour 'DAY' – all plants can thrive on this day length. But for woody plants like Rhododendrons a 24 hour 'DAY' is not unusual, whereas plants like Saintpaulias, orchids & tomatoes should have at least 8 hours of darkness. There is insufficient light for fast growing market garden products such as lettuce. Although the cabinet is good for the germination of seed light reflection can be increased by sprinkling perlite or laying strips of aluminium foil in the surface of the compost. When seeds have germinated lift them nearer to the light.

COMMENTS ON THE DEWPOINT CABINET

The following was written by Don Richards, the inventor of the 'Dewpoint Cabinet' - we hope you'll find his comments on his experiences interesting.

"We gardeners tend to specialise and though I know a bit about heathers I have never won a prize for vegetables. Perhaps the fullest use will be made of the Dewpoint Cabinet by following the thinking behind it.

Working long hours as the village chemist my hobby was a garden with more than an acre of heather planted in great variety. With rather lax morals they bred freely and the commonest weeds were always more heather's! Nearly all were rubbish, but now and then a potential winner appears. Before telling the registrar it needs to be evaluated, and for that several plants are needed, but I have no spare time.

Mist was looked at and costed carefully. For commercial growers producing thousands of easily rooted plants it would be the answer but there are snags:

1. The fine mist nozzles are liable to block.
2. The solenoids operated by the sensor sometimes stick.
3. With high amounts of water evaporating the lime from hard water builds up to kill the calcifuges.
4. A fairly sophisticated greenhouse is needed to house it.

Other commercial propagators to be used in a greenhouse had been tried but new cuttings stand little chance with the wild fluctuations of temperature. Although some look quite impressive a plastic bag can do anything that they can do. I was not prepared to risk my marriage leaving my wife to take the necessary action whenever the weather changed - there must be another way.

Elaborate controls are only cost effective in a large commercial greenhouse so I would start with a low baseline in a cellar and add light, a little heat and a stream of air saturated in water vapour. The basic principle patented was to saturate the air with warm water vapour and then cool it slightly, as it does in the top of the cabinet. Drying out, the usual cause of death for cutting's, was avoided.

Problems were expected in growing plants under such novel conditions, especially from moulds but there were just no problems. I suspect that the spores are trapped in the film of moisture on the walls and are washed down into the reservoir beneath. Spore and other infections that might be pumped in with the air are similarly trapped. In fact the slight positive pressure in the cabinet prevents invasion as in the best operating theatres!

This led to Dewpoint Cabinets being used for weaning minute young plants. In micro culture and specialised orchid culture from seed they are grown in sterile agar media in the same way that bacteria are cultivated. These processes enable commercial quantities of new varieties to be available in a fraction of the time. Initially when they were first exposed to normal growing conditions they were lost to moulds and infections but Dewpoint Cabinets enabled almost 100% success.

Trouble was also expected when cuttings and seedlings were first exposed to drying outside. At first plants were put out on calm days and returned to the cabinet at night but as there was no wilting, more serious exposure was given. Even though plants had not needed to do it before, ample moisture was pushed into the foliage, but there was a curious effect if they were returned. The plant could not turn off the flow of sap so quickly and leaves would 'weep'. In some thin leaved plants like fuchsias a row of cells near the edge of the leaves would burst but otherwise no damage was done.

Cuttings that have rooted quickly can go straight out if temperatures are reasonable but leaves grown in artificial light, either in the cabinet or growing rooms have never been exposed to ultra-violet light and may be damaged. Plants with thick leathery leaves are safe enough but those with thin or tiny leaves (as heathers) can be damaged by sunlight. A handful of grass thrown over them is usually enough and by the time it dries and blows away they can take care of themselves.

The light, warmth and humidity have proved useful to other interests. One customer found it perfect accommodation for his pet snake and it is obviously useful as a vivarium. By fitting a more accurate thermostat another used his for hatching eggs. Without the lights it can also be used for checking electrical circuits in maximum humidity.

Another found a particularly attractive seedling among his dahlias and was delighted with the speed he could increase his stock. He was so pleased that he offered his gardener's services on our stand at Chelsea.

Many of the rhododendrons in my garden are the result of an early experiment. In the free distribution of surplus seed from the Royal Horticultural Society I got four species of rhod. They were grown and potted on in a Dewpoint Cabinet in a cellar in constant light. A little foliar feed was only given when they looked starved but after 9 months some were pushing against the glass. Taking them out I realised that most were 'three years old'.

Trees and shrubs do not grow at a steady rate determined by the environment. In spring the terminal buds burst into rapid growth. This slows gradually during the summer then forms a larger terminal bud which remains dormant during the winter. The seedlings had nothing 'to set their clocks by' and were following an erratic cycle quite happily. I say '3 years old' because on many were the collars of bud scales left as the terminal buds burst into spring growth three times in the nine months. You may scorn such impatience but if you are trying to breed a rhodo. you will have to wait probably eight years to see the first flower unless you have a Dewpoint Cabinet.

Many plants fail to thrive without sleep. Tomatoes, lettuce, African Violets etc. slowly fail but I believe that woody plants and ferns grow more quickly and quite healthy in constant light. I would be very interested if anyone can demonstrate that this is wrong."

We would be very pleased to hear from you with any comments on your methods of use & rate of success & on any improvements you think we could make - & of course if you have any queries.