

SBA Technical Data Sheet Number 05 - The Langstroth and M.D. Hives

Details of dimensions and construction for the DIY Beekeeper. Illustrations reproduced, and text modified, from Advisory Leaflet 549 - "Langstroth and Modified Dadant (M.D.) Hives", Published May 1967.. © Crown copyright; reproduced by permission of the controller of HMSO.

NOTE

1. The Langstroth and Modified Dadant (M.D.) are both single-walled hives of American origin. The source for the information given here (see below) indicates that there is no recognised standard to which to refer for constructional details for these hives. In particular reference is made to variation in the dimensions of the deep and shallow boxes depending on the source and manufacturer.

2. The information given here has been copied and summarised from the Ministry of Agriculture, Fisheries and Food Advisory leaflet 549, Langstroth and Modified Dadant (M.D.) Hives, © Crown Copyright 1967.

3. Almost all measurements are Imperial. They have not been converted to Metric equivalents as the original designs were specified in Imperial measurements. Anyone who wants to work in Metric equivalents may, of course, carry out the conversion for their own use.

4. The Langstroth hive is designed to take short-lugged (5/8") frames. The brood frames measure 17 5/8" x 9 1/8"; the corresponding shallow frames measure 17 5/8" x 5 3/8"

5. The Modified Dadant (M.D.) hive is designed to take short-lugged (5/8") frames. The brood frames measure 17 5/8" x 11 1/4"; the corresponding shallow frames measure 17 5/8" x 6 1/4"

Equipment

Tools - hand (power tools optional)

Consumables

- Timber - any softwoods, including Western Red Cedar, are suitable provided the timber is well seasoned, sound, and free from large knots and rot.
- Wood Preservative - Colourless and odourless types, free from insecticide, are suitable. Cedar requires no preservative.
- Nails - assorted sizes
- Non-rusting metal sheet or other waterproof material (such as tar-felt) for covering the roof
- Metal Runners - these support the ends of the frames and are obtainable from bee appliance dealers. One pair is required for each brood box or super - they are optional, but if not used then there is a modification in dimensions
- Queen Excluder - these are inserted between the brood box and honey supers, and are available from appliance dealers. The excluder should be framed with softwood strips to provide a bee space on the upper side.
- Spacers. Metal spacers for frames are not very suitable for use with short-lugged frames, and therefore screw eye spacers or self spacing Hoffman frames are advised

Method of Preparation

All wood should be cut and planed to size before trial fitting together. It may be advisable to pre-drill nail holes depending on the timber being used, if it is inclined to split. Exterior grade glue, though not absolutely essential, may be used to strengthen joints if desired. Preservative should be allowed to dry thoroughly before bees are introduced to the hive.

Method of Construction - General Principles

Both types of hive are of identical design and construction; the only difference is in the dimensions (see section above on frame sizes). The hive consists of a floor with an entrance block, one or more deep (brood) boxes, crownboard, and a roof. With the addition of a queen excluder, supers are used for the storage of honey. The Langstroth boxes are made to take ten frames; the M.D. boxes to take eleven frames, spaced at 1 1/2" centre to centre in each case. The floor is designed to be reversible, to provide a full width entrance 7/8" deep on one side or 3/8" deep on the other. It should be supported clear of the ground on bricks, or some other type of stand. An entrance block may be used to close off part of the entrance when the floor is positioned deeper side uppermost.

Method of Construction - Details

The separate parts of the hive are described in the following sections - each is illustrated, and there are accompanying notes for each part as well.

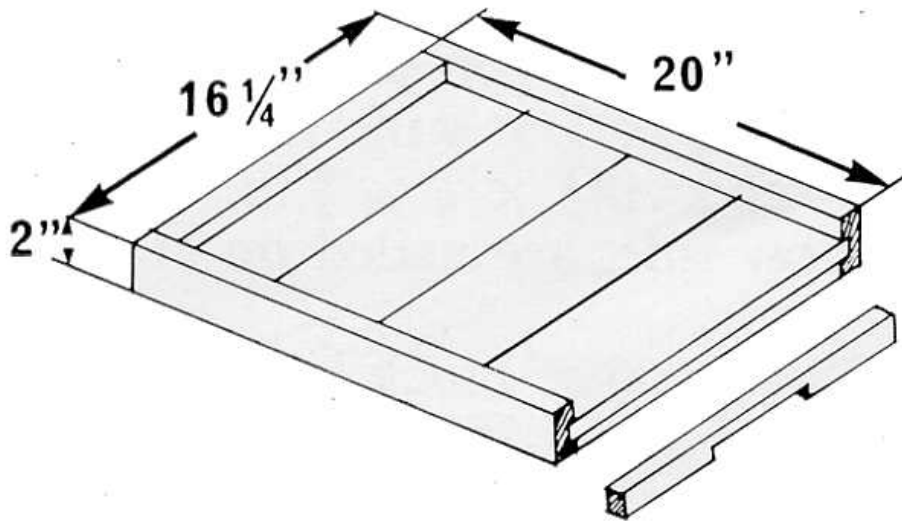
Constructional Details

1. Floor and Entrance Block
2. Brood Chamber and Shallow Super
3. Crownboard
4. Roof

1 Floor and Entrance Block

- external dimensions 16 1/4" wide and 20" from front to back
- floorboards 3/4" thick timber, tongued and grooved or lapped joints, 15" long and convenient widths to make up to 20"
- timbers grooved 1/4" deep into side rails 20" long, 2" deep and 7/8" thick
- the grooves 3/4" wide, 3/8" from one edge and 7/8" from the other edge
- back rails 14 1/2" x 7/8" x 7/8" for the deep side and 14 1/2" x 7/8" x 3/8" for the shallow side, are nailed on at opposite ends
- The entrance block is only used when the floor has its deeper side uppermost.
- It is a fraction under 7/8" square cross section and 14 3/8" long, with a 5" x 5/16" central cut-away on one face. This allows it to be used to either regulate the entrance to 5" wide, or to close off the entrance completely.
- Drive a staple into the inner face of the side rail on each side at the front of the floor, 7/8" in from the front and leaving about 1/4" of the staple projecting. This will prevent the block being accidentally pushed into the hive and out of reach.

Fit the floorboards into the grooves of the side rails. Nail in from the outside of the side rails. Nail on the back strips, one on each side and at opposite ends, with nails in at both ends.



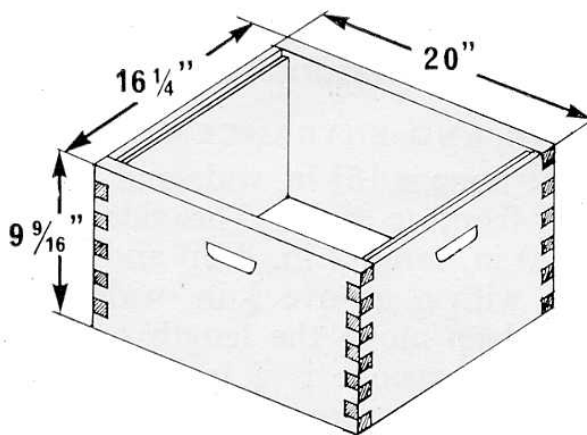
FLOOR AND ENTRANCE BLOCK

Con-

structional Details - Modified Dadant

The floor is identical to the Langstroth except for the overall size, which is 20" long x 18 1/2" wide.

2 Brood Chamber and Shallow Super



BROOD CHAMBER

- external dimensions are 20" long, 16 1/4" wide and 9 9/16" deep
- Constructed from four pieces of 7/8" thick timber
- lock-jointed or halved at the corners, and nailed both ways
- internal dimensions are 18 1/4" long and 14 1/2" wide
- end walls rebated at the top 7/16" into the thickness from the inner face; the rebates should be 7/8" deep if runners are to be fitted, or 5/8" deep if runners are NOT to be used
- D'-shaped finger grips are cut centrally into all four walls 3 1/2" long

and 1/2" deep, located 2 1/2" below the top edge

Cut all timber to size and cut the finger grips in the outer faces. Form the box by nailing (and glueing also if desired) at the four corners.

Shallow Super

Construction of the shallow super is identical to the Brood Box. Only the dimensions are different:

- depth is 5 3/4"
- runners may be omitted as with the brood box, in which case the rebates should be cut 5/8" deep rather than 7/8" deep

Bee Space

The dimensions given here are such that the deep boxes when finished are 7/16" deeper than the frames they are to contain; the shallow boxes are made 3/8" deeper than their frames. This results in a 1/4" bee space above the frames and a very small space below to allow for a certain amount of shrinkage in the timber. It is important however to use well seasoned timber, so that when the hive is assembled the bee space between boxes does not become less than 1/4" as a result of further shrinkage in the widths of the boards.

Constructional Details - Modified Dadant

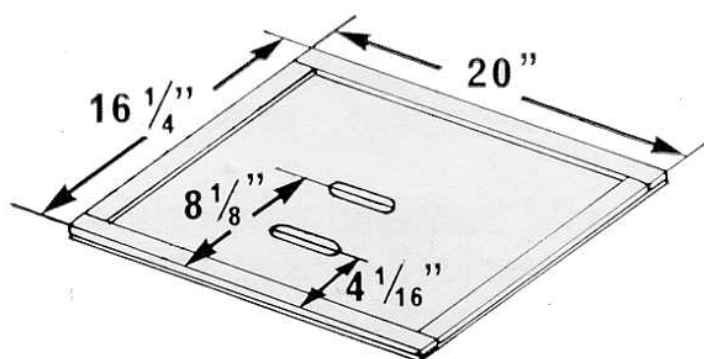
The Brood chamber measures 20" long x 18 1/2" wide, and is 11 3/4" deep, using 7/8" finished timber. It is rebated at the top of the end wall exactly as for the Langstroth.

The shallow super measures exactly the same, except for the depth which is 6 5/8".

All other constructional details are exactly as for the Langstroth.

3 Crownboard

- external dimensions are 20" x 16 1/4"
- constructed from softwood at least 3/8" thick with tongued and grooved or rebated joints; or plywood at least 5 mm thick
- framed with 7/8" x 3/8" softwood strips on the upper side only
- two holes measuring 1 3/16" x 3" are cut with their ends shaped to receive a Porter bee escape
- the long sides should be parallel to the long side of the crownboard; one hole situated centrally and the other midway between the centre and the edge of the crownboard



CROWN BOARD

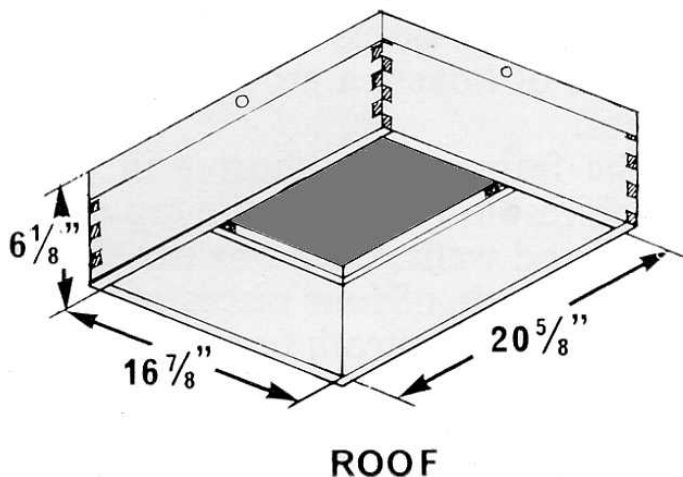
Form the board from softwood or plywood and then cut and fit the escapes before fitting the framing to the outer edges.

Constructional Details - Modified Dadant

The construction is identical to that for the Langstroth, except for the overall size which is 20" long x 18 1/2" wide.

4 Roof

- internal dimensions are 20 5/8" x 16 7/8"
- side walls not less than 1/2" thick
- top boards not less than 3/8" thick
- depth inside is 5 3/4"
- corners lock jointed and nailed both ways
- if halved corners are used, the timber for the sides should be at least 5/8" thick
- roof is covered with non rusting sheet metal or other waterproof material which extends at least 1 1/2" down the sides
- four strips of wood measuring 1 1/4" x 3/4" cross-section are fixed around the top inside to give a head space of 1 1/4" above the crownboard
- ventilation holes 3/4" in diameter are bored centrally through the sides of the roof and the spacing strips, and backed on the inside with perforated zinc or rustproof mesh



Assemble the four sides of the roof, taking care to nail the corners in both directions, then fit the top boards, nailing them through onto the side boards along all four sides. Next fit the four strips to provide the head space, then cover with waterproof cover (metal or tarred felt) before completing the ventilation holes.

Constructional Details - Modified Dadant

The inside measurements of the roof are 20 5/8" long by 19 1/8" wide, and otherwise of exactly the same construction as the Langstroth.

Health and Safety Information

The following hazards are identified:

1 Danger or personal injury from:

1. Hand tools
2. Power tools
3. Hammer and nails

Precautions:

1. Protective overall and gloves
2. Goggles

DISCLAIMER: - Great care has been taken in the preparation of this technical sheet

to ensure accuracy but the Scottish Beekeepers' Association cannot accept liability or responsibility. Beekeepers must therefore use the information at their own discretion and risk.

Acknowledgements:

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