# "In the Beekeeper's Work Shop"
## Building a Mini-Mating Nuc

The first section is a brief survey of mini-mating nucs, discussing the whats, whys and how to's.
The intention is to stimulate the curiosity of beekeepers who may not be familiar with the concept.
The second section deals with plans for making a mini-mating nuc.
A mini-nuc has all of the components of a standard hive but with a few features added on.

In the plans that follow, we will only focus on the added steps.

# Mini-Mating Nucs - Part 1: Background


Working a mini-nuc

### *Introduction*

Consider the honey bee. A tiny insect, no bigger than your thumbnail. Yet the role of the honey bee in the natural world is huge… beyond big.

Also in the beekeeping world, we can see this same theme played out in the nucleus hive - or nuc. A nuc is a small hive, usually 4 or 5 frames, which has become an important tool for today's beekeepers.

### *What is a Mini-Mating Nuc*

A mini-nuc is a tiny version of a NZ standard Langstroth-style hive. Whereas a nuc is half the size of a standard hive, the mini-nuc is yet again half the size of a nuc - or one fourth the size of the standard (photo right, a 4 chambered mini-nuc).

We read the words "mini-mating nuc" and the impression is that these are used strictly for getting a virgin queen mated. As we shall see, this is certainly not the case.

Mini-nucs can certainly be used for mating a virgin queen, but they can also be used for makings splits and divides, for replacing winter kill, for starter and finisher colonies when grafting queens, for raising queens from eggs, for splitting hives and even for overwintering replacement colonies.

Mini-nucs should be approached with the idea that these tiny hives are "starter" colonies. Eventually, the colony in a mini-nuc will be moved to larger (permanent) hive.

### *Deep (FD) vs. Mediums (3/4)*

Most mini-nucs used to be deep frames,
There are, however, more and more beekeepers working with medium depth frames; these are truly tiny frames. (see photo)

Why? A number of years ago, we began switching all of our equipment over to medium depth.
It lightened the load on the back when lifting super and most importamtly, required only one style of equipment for the entire operation.
Using medium depth mini-nucs keeps true to this theme.

Do medium depth mini-nucs work?
We think so, although these tiny hives do require a bit more timely manipulations than their "deep" cousins.


A medium-depth mini-frame.

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### *The Importance of Feeding*

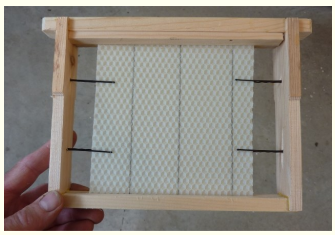
First, a small colony needs the extra boost that feeding can provide. Second, feeding stimulates brood production and the drawing of the comb. Third, monitoring feeding provides a simple visual clue as to how things are going inside the mini-nuc.

If the amount of syrup in the jar is not declining, then this could be sign that something unusual is going on and the mini-nuc needs attention. The plans include an inner cover including four 1/2 a litre jars of syrup (1:1) ) with perforated lids as top feeders.

Feeding a mini-nuc. colony.

### *Drawing Foundation*

Put mini-frames in an established strong hive and let the bees draw out the comb. The best time of year for this is in early spring, when the they are in comb-building mode.
Even if you have no immediate need for these drawn out mini-frames, it is a good idea to do so and put the drawn out mini-frames in storage. The day will soon arrive when you need them.



### *Populating a Mini-Nuc*

Get that initial population of bees for a mini-nuc from a strong healthy hive. You don't need many, a couple of cups will do. Open up a parent colony, go into the brood chamber and look for a frame full of young nurse bees.
(They are the ones that draw the comb, feed the larvae and generally run the hive)
Make sure the queen is not on this frame and shake the bees into the mini-nuc. A full size frame covered in bees should be enough to fully populate two mini-nucs. Spray the bees with a light sugar syrup before you shake them into the mini-nuc, to keep them calm and together after you shake them. Close up the mini-nuc entrance overnight. Be sure to put a feed jar (1:1 sugar syrup) over the hole provided for this in the inner cover. The mini-nuc can be opened for business as usual the next day.

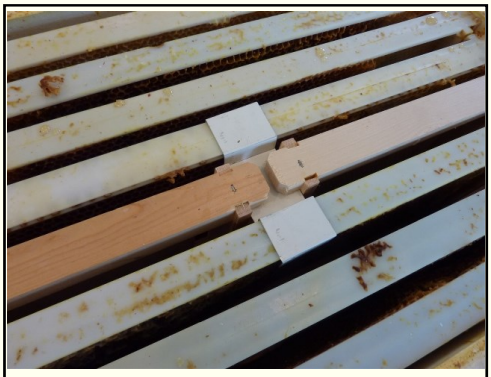
### *Transferring to Permanent Hive*

Transferring mini-nuc frames is relatively simple, just move a set ot two mini-frames, bees and all, into their permanent home replacing one standard frame.

Notice the clip to supported the end-to-end mini frames in the middle, as shown in the picture.(refer to the plans for making this clip.)

The transfer will probably be done when the mini-frames are nearly full of sealed brood and/or uncapped larva.

After a couple of weeks, when the larva have emerged, the mini-frames can be moved back into the mini-nuc to begin another cycle.



Full size hive. Note white transfer clip.

### *Mini-nuc Queen Introductions*

We have have several options: you can use a ripe queen cell, a virgin queen or even a mated queen.The techniques for a mini-nuc are identical to those you would use for a queen introduction to a standard hive. If you are working with a ripe queen cell, hang the cell between the frames or on drawn comb. This is no different than in a full-size nuc. Mark the calendar on the day the queen is introduced. It takes about three days after the queen emerges for her integument to harden sufficiently so that she can fly. Allow another three or four days for her mating flights. After 10 days, you can inspect the mini-nuc for the queen and eggs, a sign of a successful introduction.

### *Summary*

Mini-mating nucs appear to be an idea whose time has come. They are easy to work with, open up new vistas and are… just plain fun to work with. You will have little invested and a lot to gain. You will only have a small quantity of bees in the mini-nuc, so the parent colony should not be adversely affected. You will know within a couple of days if the effort will work. If it does not, you can return the "borrowed" bees back to their parent colony and be none the worse for wear.
Hopefully we have your interest.

***Now lets move on to part 2 of these plans and go out to the workshop and build a mini-nuc.***

"In the Beekeeper's Work Shop"

Building a Mini-Mating Nuc

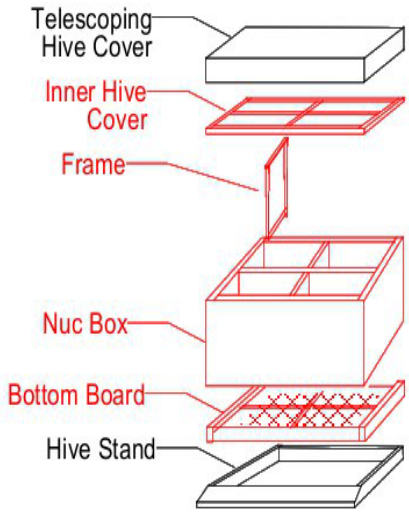
# Mini-Mating Nucs - Part 2: Building Your Own

***Introduction***

This mini-nuc is basicly a NZ standard Longstroth hive body devided into four seperate mini-nucs (Figure1)
The components of the standard hive modified for a mini-nuc are:
a, The screened bottom board, b, The hive body (nuc box), c, The frames d, The inner cover
In the plans that follow, each of these components are addressed.

Enjoy!

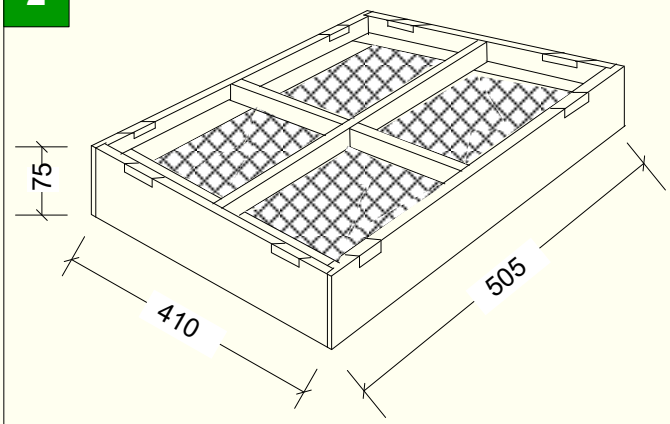
1




Mini-Mating Nuc Components
(custom components highlighted in red)

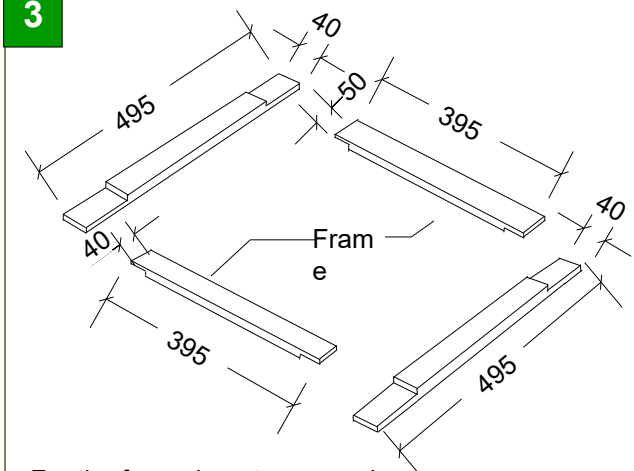
***Construction Details: Mini Bottom Board***

2




The mini-nuc screened bottom board starts with a standard 10-frame screened bottom board. Two perpendicular fillers divide the top into four sections and two gated openings are provided for each of the four chambers.

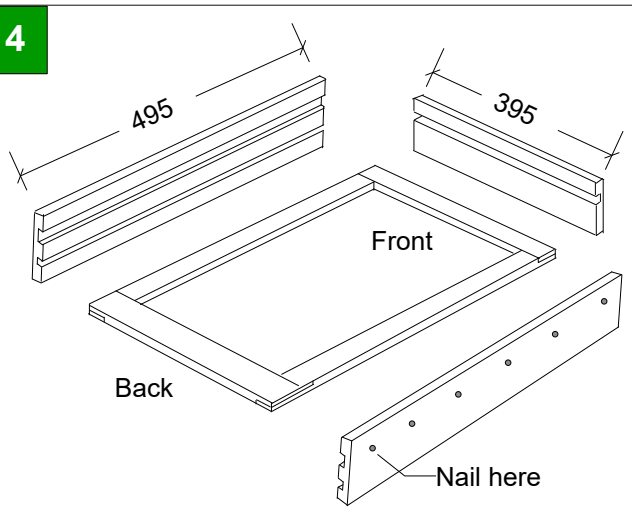
3




For the frame insert you need:
2 side pieces 495 long by 40 wide x 20.
1 front piece 395 long by 40 wide x 20.
1 end piece 395 long by 50 wide x 20.
Assemble with half lap joints as shown.

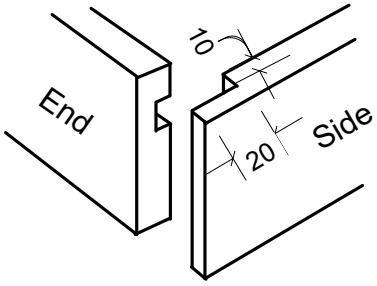
***Another option: Modify a standard open mesh floor!***

## 4



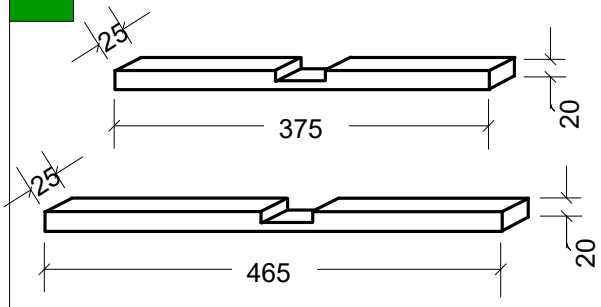

Note the front rail only has the top frame dado and does not have the bottom sampling board dado.

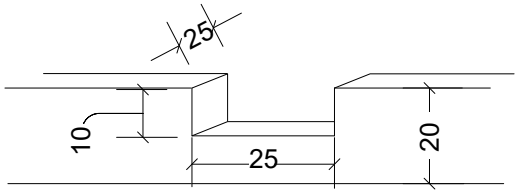
## 5

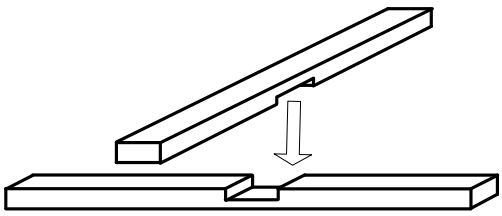



From the side pieces, cut a rabbet 10mm deep and 20mm wide. This will allow the end to butt up against the side creating a rebate joint.

## 6



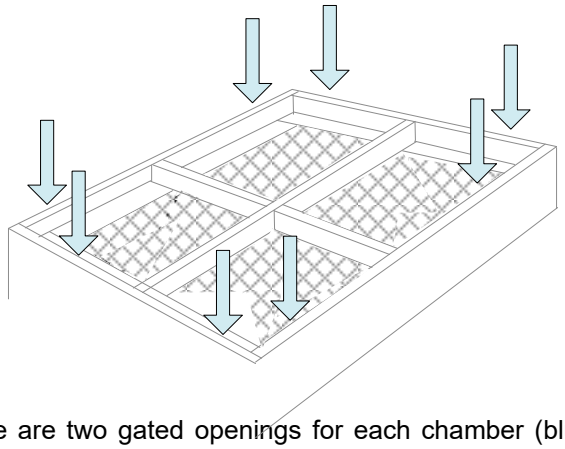



From a 1x4" cut a filler 465 long and a second filler 375 long (top). Both fillers are 25 wide.

In each of the cross pieces, cut a dado 10 deep and 25 wide (middle). Center the dado along the length.

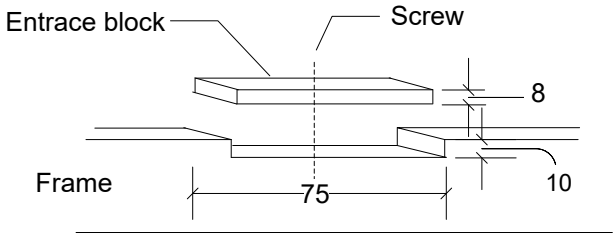
Assemble the fillers by matching the dados (bottom). The tops of the fillers should be flush.

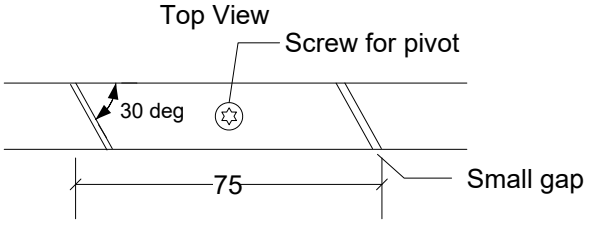
## 7



There are two gated openings for each chamber (blue arrows) located on the outside rails. Each opening is located 100mm (aprroximately)from the corner.

## 8




Detail of the gated opening. The entrance opening is 75 wide and 10mm deep with a 30 degree angle for the cross cut. Each entrance block is 8mm thick. Pivot screw is countersunk, flush to the top.

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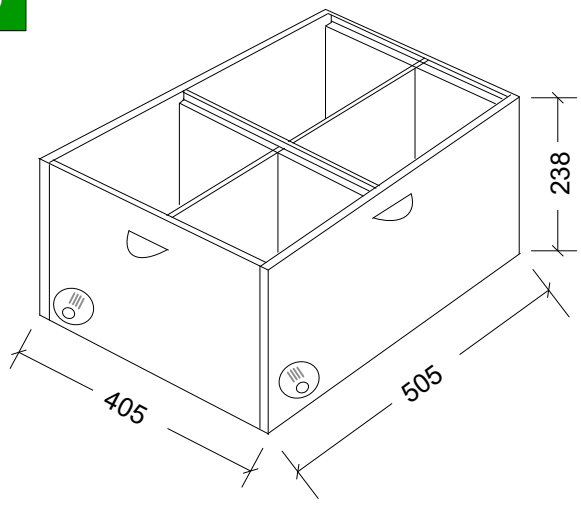
## Construction Details: The Mini-Nuc Hive Body

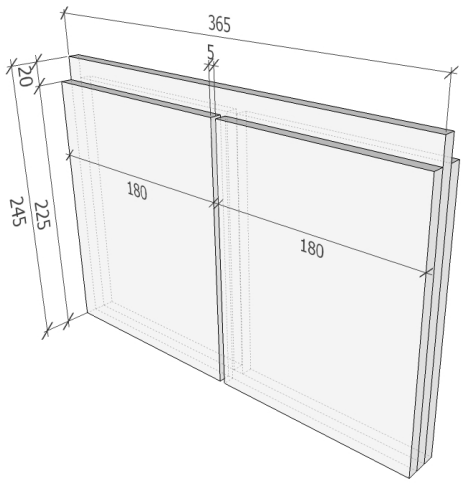
The hive body depicted is a standard full depth, you can also make a mini-nuc from a 3/4 depth hive body (185mm). Where appropriate, we will provide the dimensions for both in the plans that follow.

**9**



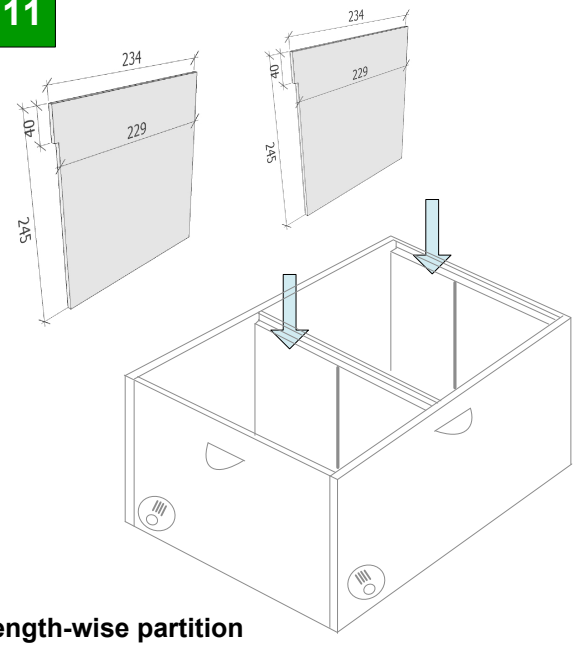

Start with a standard, 10-frame hive body.
Interior partitions are added to create four chambers.
Each chamber has an entrance hole in the low er corner.

**10**




**Cross-wise partition**
Constructed of five pieces of 10mm plywood.
The centre piece is 365mm long and 245 high.
The four outer pieces are each 180mm long and 225 high. When assembled, the center piece will extend 7mm above the hive body.
(For 3/4 body: Centre piece hight:193mm
:Outer pieces:172mm)

**11**




**Length-wise partition**
The two 5mm partitions are 234mm long and 245mm high and slide into the dados on both ends of the hive body and the cross-wise partition.
For 3/4 body: Partition hight:192mm

**Step 1.** (10) Assemble cross-wise partition.

**Step 2.** (11) Prepare length-wise partitions and cut 5mm wide dados on both ends of inner the hive body,10mm deep.

**Step 3.** (11) Place the assembly on a flat surface and make sure the crosswise partition is placed square on the hive body. With all this into place, fasten the centre of the cross-section with 2x 3 screws from the outside.

**Step 4.** Drill additional entrance holes in each chamber.

**Step 5.** Cut 4 inspection covers 250 by 205mm(Optional)

# Construction Details: The Mini-Nuc Frames

***Introduction***

The frames for a mini-nuc have all of the features as standard frames but are only half as long
(see photo at right; this is a 3/4 mini-nuc frame).

## Step 1 Assemble frames the Mini-Frame

***a:*** A min-nuc frame is 235mm long, you make two mini's from one standard frame. (Figure 12).

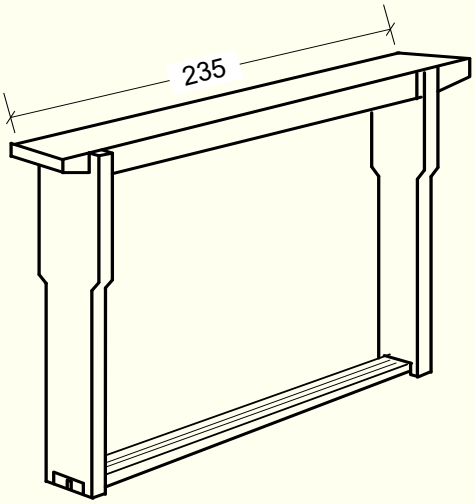
***b::***Halve the top- and bottom bar of a standard frame and shape the topbar ends. Assemble your frames, and wire and fit foundations.

The height of the mini-nuc frame is the same as its standard equivalent; F/D's are 230 and 3/4's are 177mm.

## Step 2. Make Transfer Clips (Figure 13)

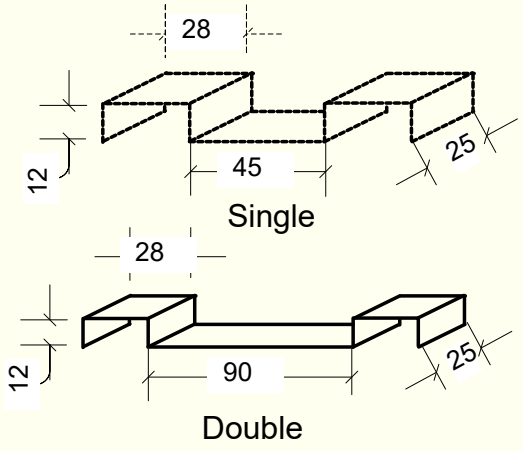
Transfer clips are needed to support the two mini-frames where they meet in the middle.
In these plans, we provide two options for transfer clips.
One style is used when transferring two mini-frames placed between two standard frames.
The other style is used when transferring four mini-frames between two standardframes.

**12**

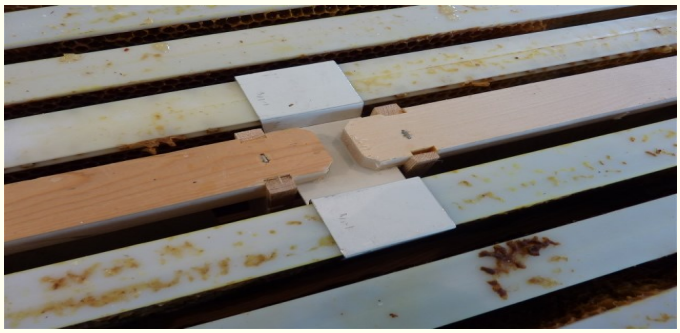



The frame for the mini-nuc is 235 long, about half that of a standard frame. The hight is the same as the standard frame at 230 for deeps and 158 for 3/4 frames.

**13**




Sizes for single and double wide transfer clips.
The clips are made out of light metal (such as aluminum or thin sheet metal).



## *Tips for getting frames drawn*

Once everyting is prepared and assembled the best way to get your mini-frames drawn out is:
1. Remove the two length-wise partitions.
2. Place the complete hivebody on top of your strongest hive.
3. Get the topfeeder into place and keep feeding sugar sirup.

*This seemed to be the quickest way to get your mini-frames drawn out!*

## Construction Details: The Mini-Nuc Inner Cover

***Inner hive cover***

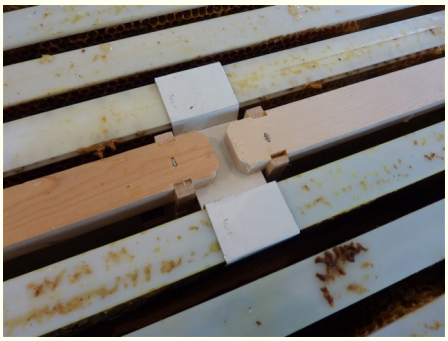
The inner hive cover for the mini-nuc is basicaly a standard hive cover with 4 feeder holes cut-out, centered in each of the four mini-nuc sections.

***Inspection cover***

You need four inspection covers for working the mini-nuc. Inspection covers can be made from any thin plywood. The covers are 250 by 205mm

## Photo Gallery

1


2


3


4


5


6


**Photo Captions:**

1. Partially assembled bottom board for the mini-nuc.
2. Transferring a mini-frame to a standard hive.
3. Marked queen on mini-frame with honey, larvae and capped brood.
4. Mini-nuc with feeders installed.
5. A mini-nuc on the bench ready for the apiary.
6. Mini-frames transferred to standard hive body

Metric convercion: by Rudy Scheepens
Original: by Stephen E. Tilmann and Mike Risk
https://michiganbees.org/wp-content/uploads/2017/02/Mini-Nucs_20150130.pdf