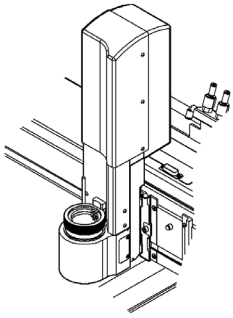# ZUND
TRAINING HANDOUT
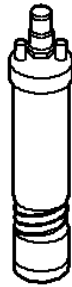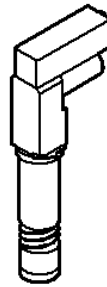
HARDWARE
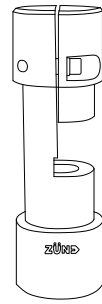
MODULE

*Module 1 & 2
accepts tools*

TOOLS

*Universal Cutting Tool
(UCT)*

*Driven Rotary Tool
(DRT)*

HOLDERS

**varies by blade,
placed into tool.*

INTRODUCTORY TIPS

*To ensure quality of cuts, buy your own knives and *always* test knives with material before cutting:

DON'T CUT: metals, plywood, material thicker than the depth of the knife
DO CUT: paper, thin-guage plastics, fabric, foam core, chip board, thin veneer plywood (max 1/16"), basswood

*Bring a small, extra piece of material for test cuts (Step 5 below), before running your final job.

*Use the *"Product Catalogue: Accessories + Consumables"* spiral-bound book at the Zund to determine which knives work with which materials.

*Be sure to prepare clean, well constructed files (illustrator: .ai) for cutting. Files should have as few control points as possible, no line type descriptions from illustrator (i.e. dashed designation), and layers for different types of cuts.

*****DO NOT** over tighten any machine hardware (modules and holders) - finger strength is sufficient torque.

INTRO

Before starting setup, check the machine for knives left behind by the previous user - if found, be sure to remove them (instructions below) and replace them with the appropriate knife for your job. When finished, please remove your knives - any knives left behind will be claimed by the FABLab.

PROCESS

1. TURN THE ZUND ON.
—press **F1**
—Declare tools already in each module: OK.
The tools can be easily reconfigured later.
      -Module 1 = UCT = drag knife
      -Module 2 = DRT or UCT = rotary knife
      -Module 3 = empty
*If there is a different tool in the module than listed above, press **1. Tool Selection**, use arrows to select the tool that is in the module, plress OK.

2. REPLACE KNIVES
—press **F4**, then press **start**
—remove UCT or DRT
—change the holder if necessary for the specific knife you're using
—insert knife *(the drag **knife point** should always line up at the **center line** of the holder!)*
—**DON'T** over-tighten the hardware:
finger strength is enough stress!
—return UCT or DRT to module *(red dots line up)*
—continue to next module (UCT or DRT) if using both, replace holders/knoves as necessary
—press **OK** when done and confirm the types of tools in each module.

3. SET VACCUUM
—press **˚vac**
— press **5** for power level
— level 2 is recommended for non-porous materials, but adjust higher or lower as necessary.
—press **OK**, then **ESC**

4. INITIALIZE Z-AXIS
*This must be done for EACH tool that you are using, one at a time, by module.
— For Module 1: press **F1**
— press **2** for Initialization
— press **2** for Auto Init
— press **Start**, wait for instructions
— Fit AKI (Only remove the AKI from its holder when prompted, otherwise you will get an error)
— press **OK**
— press **ESC** when the machine is finished
— To initialize z-axis on Module 2, start the process by pressing **F2**, then repeat as above
— Return AKI to its PROPER slit in the machine, or you will not be able to continue set up.

5. TEST CUT
*This needs to be done for *EACH blade* you plan to use during your final cut.
— Place material sample on spoil board and move carriage so that tool to be tested is over the material
— For Module 1, press **F1**
— press **2** for Initialization
— press **4** for Test Cut
— press **Start**: the machine will cut a square
— Check the cut, if it cut well, press **ESC**, if the z-axis needs adjustment follow **5a below**.
—For Module 2, press **F2**
—repeat steps above as you did for Module 1

5a. REFINE Z-AXIS POSITIONING

*NOTE: entering a *POSITIVE* number moves the position of the knife *DOWNWARDS* (towards the table), entering a negative number moves the cutting position of the knife upwards (towards the ceiling).
— In the Initialization menu, press **5** for Z-offset
— enter a value: using +/- .005" increments, BE CAREFUL to do your math correctly.
— press **OK** to save
— Repeat Test Cut (Step 5) and Z-axis Adjustment (Step 5a) as necessary

6. SET MATERIAL ORIGIN

— Place material on the bed aligning the edges parallel to the spoil board edge, but offset by a few inches
— press **F8** for Reference
— press **3** for Define Reference Point
— Move laser, using directional arrow keys on Zund console, to the intended (0,0) edge of material
— press **OK** (this should move the knife to the point where the laser just was)
— press **ESC** to exit menu
The Zund will not be ready to operate until it "goes online" by pressing the On-line button (see Step 11 below)

7. LOG IN TO COMPUTER

NOTE: You cannot log onto the Zund computer until you have been trained by a Lab Assistant
press **crtl + alt + delete**: using your uniquename and password

8. TRANSFER FILES

— From a USB or the Network, drop your cut-ready Illustrator file into the **"Hot!!!"** folder,
where it will immediately feed into the
Cut Queue and dissappear from the folder.
This file will not be recoverable, so have a copy saved elsewhere.
— Open '**Cut Queue**' program and highlight your file in the list
— OPTIONAL: Click the **red 'E' button** at the top right of the menu which will open the Cut Editor.

9. CUT EDITOR (OPTIONAL STEP)

— Use this program to make minor edits to your file, check cut order, etc.
— The order of layers (top to bottom) directly reflects the order of operations (cuts) on the Zund, set geometry on separate layers accordingly
— Save, close

10. OPEN FILE IN CUT CENTER

— hightlight your file in the Cut Queue, and press the **red 'C' button** at top
* *Use the right-hand window as a checklist which must be completed before cutting.*
— assign material, enter thickness (use calipers to be exact)
— cutting mode = Standard
— double click layer
— method = thru-cut (or register, crease, draw, etc. as intended)
— tool type = UCT or DRT (based on material, knife set up)
— select knife
— cutting mode = standard
— initialization = base
**the rest of the inputs are optimized based on data entered*
— press OK
— double click on the image, highlighted in green and red on the bottom right, to verify that the knife and tool are in the correct module
If this image is completely red, you have an error (check your tool and knife input in previous step)
— copies: adjust as necessary, otherwise = zero
— job processing = manual feed
— park position = custom

11. GO ONLINE

— on Zund machine, press **On-line** button

12. START JOB

— on computer, click **Start Job**
* TO PAUSE: at anytime, press any of the directional arrow keys on the Zund console. To resume after pausing, press the On-Line button.

13. FINISHING UP

— when job is complete, select redo or abort
— go offline by pressing **On-line** button
— remove your knives from holders (follow step 2 above): do this *before* turning off the machine
— SHUT DOWN ZUND: **shift + stop**
— LOG OFF COMPUTER

14. CLEAN UP!