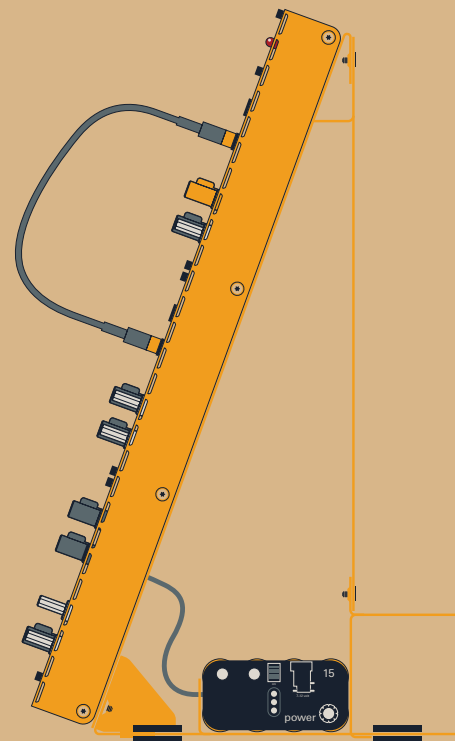
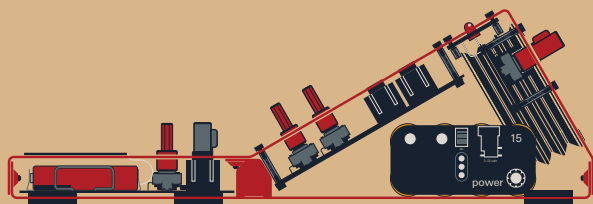
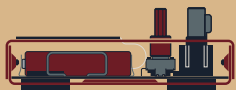


pocket
operator™
modular

モジュラー



16

170

400

symbols

learn the meaning of the symbols on the opposite page before you start building.

es ist wichtig, das zu lernen bedeutung dieser symbole bevor sie anfangen zu bauen.

il est important d'apprendre le signification de ces symboles avant de commencer la construction.

è importante imparare il significato di questi simboli prima di iniziare a costruire.

それを学ぶことが重要です
これらのシンボルの意味
ビルドを開始する前に

bending


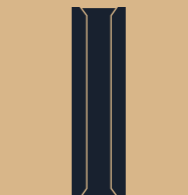
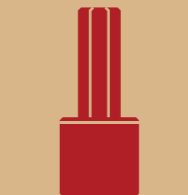

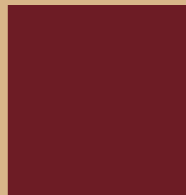
use a desk or similar as a support when you bend the sheet metal and its flanges. pay close attention to the direction of the bends before you bend as you only have one attempt before the support tabs loose their strength and you may rip the part.

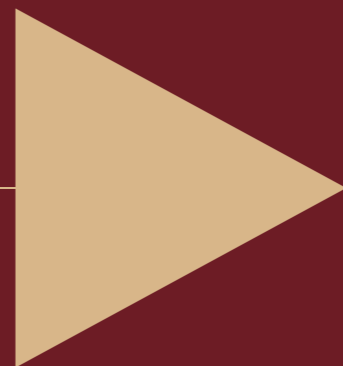
erwenden sie einen schreibtisch oder ähnliches als unterstützung, wenn sie das blech und seine flansche biegen. achte genau auf die richtung der biegungen, bevor du dich biegst, da du nur einen versuch hast, bevor die stützlaschen ihre stärke verlieren und du sie reißen kannst..

utilisez un bureau ou un support similaire lorsque vous pliez la tôle et ses brides. portez une attention particulière à la direction des plis avant de vous pencher, car vous n'avez qu'une seule tentative avant que les pattes de soutien ne perdent de leur force et que vous ne puissiez les déchirer.

utilizzare una scrivania o simile come supporto quando si piega la lamiera e le sue flange. fai molta attenzione alla direzione delle curve prima di piegarti, poiché hai solo un tentativo prima che le linguette di supporto perdano la loro forza e potresti strapparle.

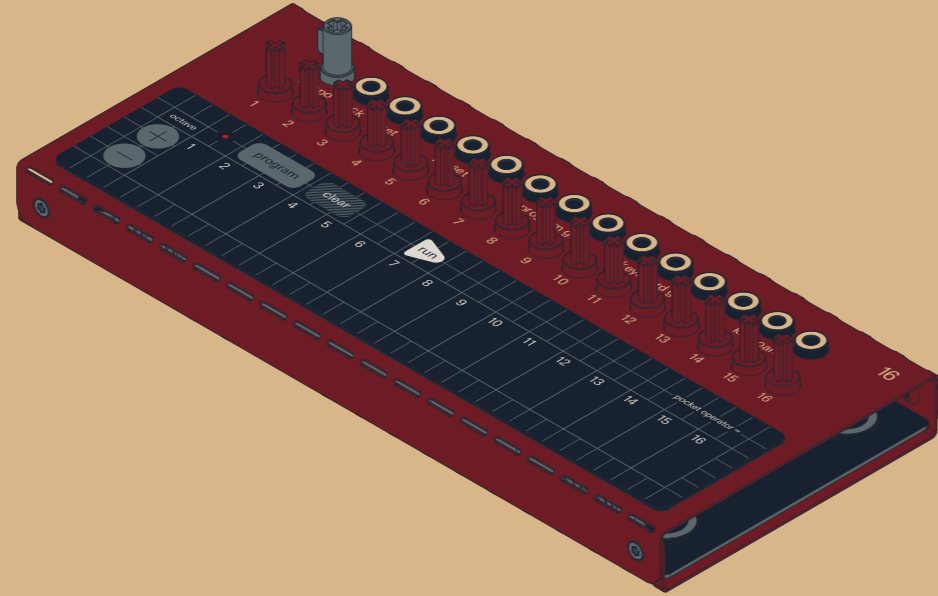
板金やフランジを曲げるときは、机などをサポートとして使用してください。サポートタブが力を失う前に曲げる前に曲げの方向に細心の注意を払ってください。

							
main parts A–F	module 1–16	sheet metal chassi kit	pocket operator modular system	pay attention to the detail within the circle	note the direction	build step 1...2...3	press all the way down and make sure it's flat
							
sheet metal screw	module screw M2	torx T8	stand-off Ø 4 X 14	trim knob	value knob	see page no. for detailed information	task completed
							
screwdriver torx T8	rubber foot	rubber foot for keyboard	400 color	170 color	16 color	attention critical detail	wise quotes



16

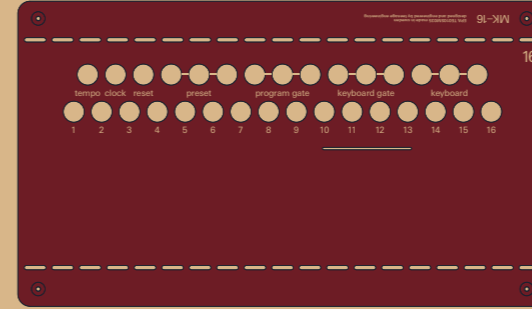
let's build



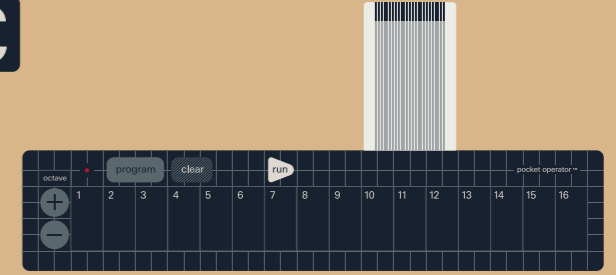
parts

identify parts
teile identifizieren
identifier les pièces
identificare le parti
部品を特定する

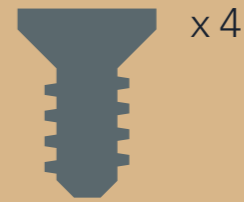
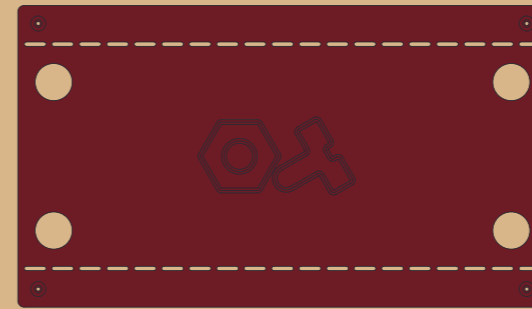
A



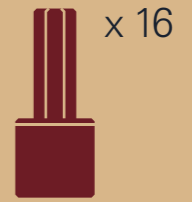
C



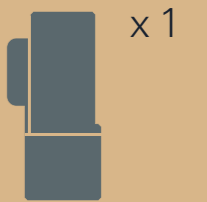
B



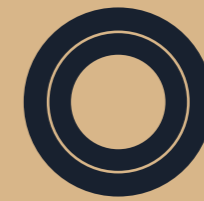
x 4



x 16



x 1

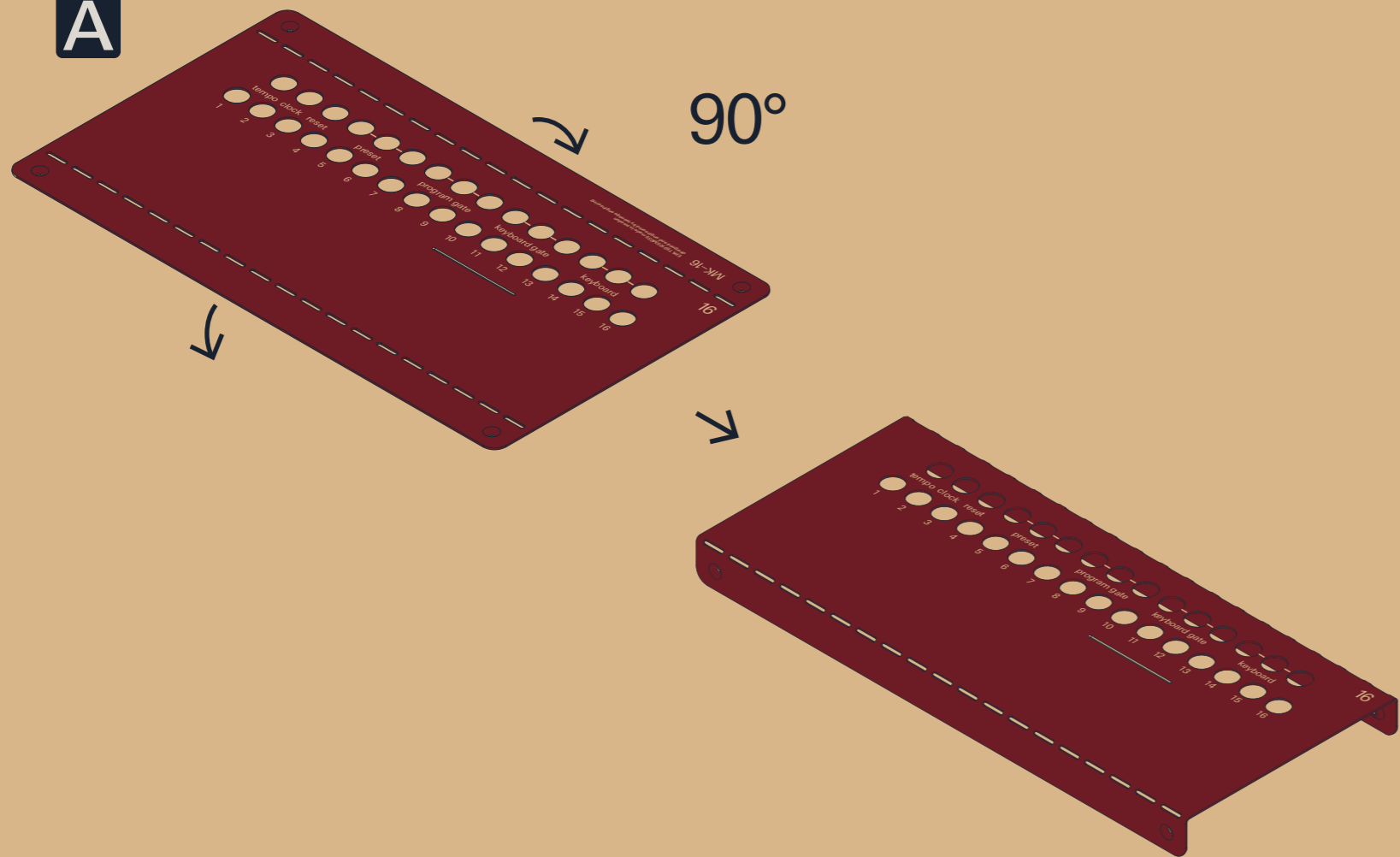


x 4



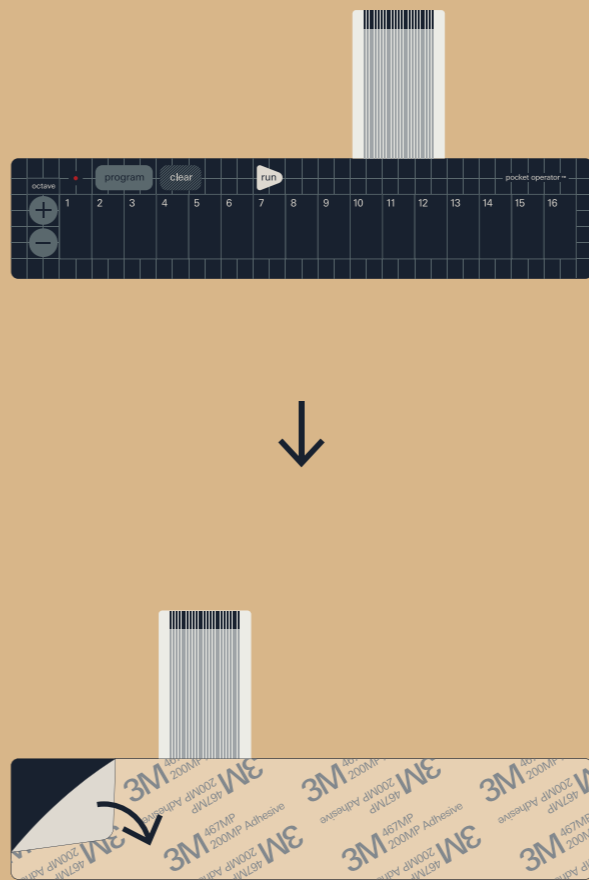
1

A

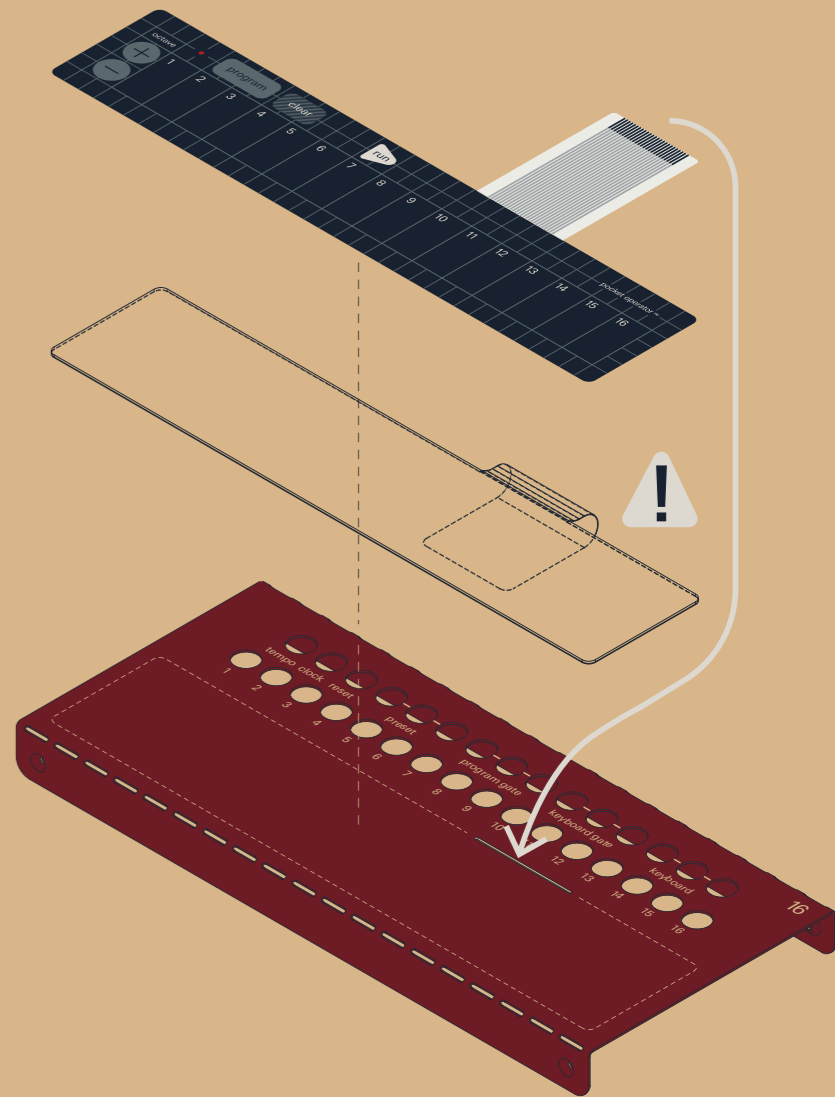


2

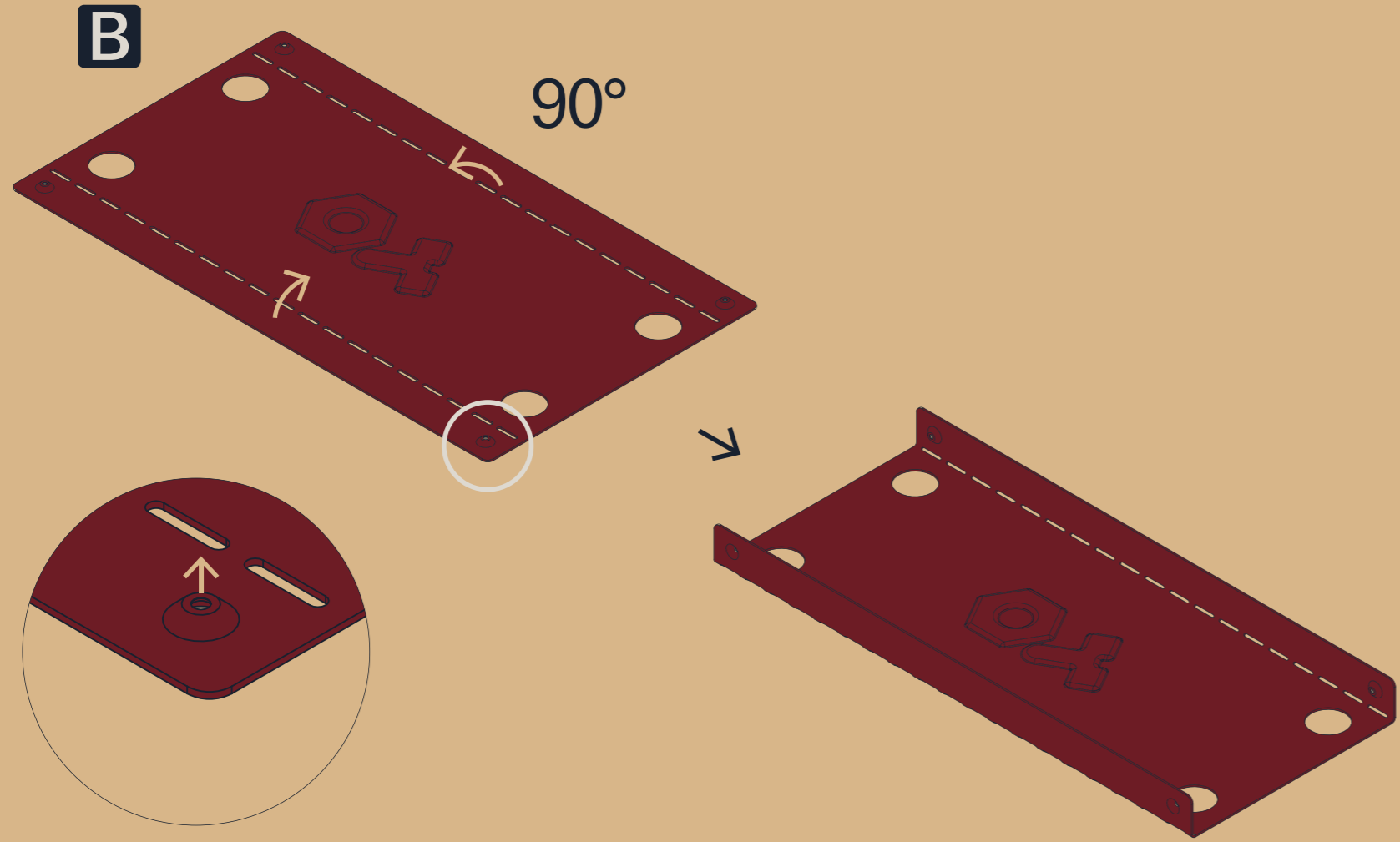
C



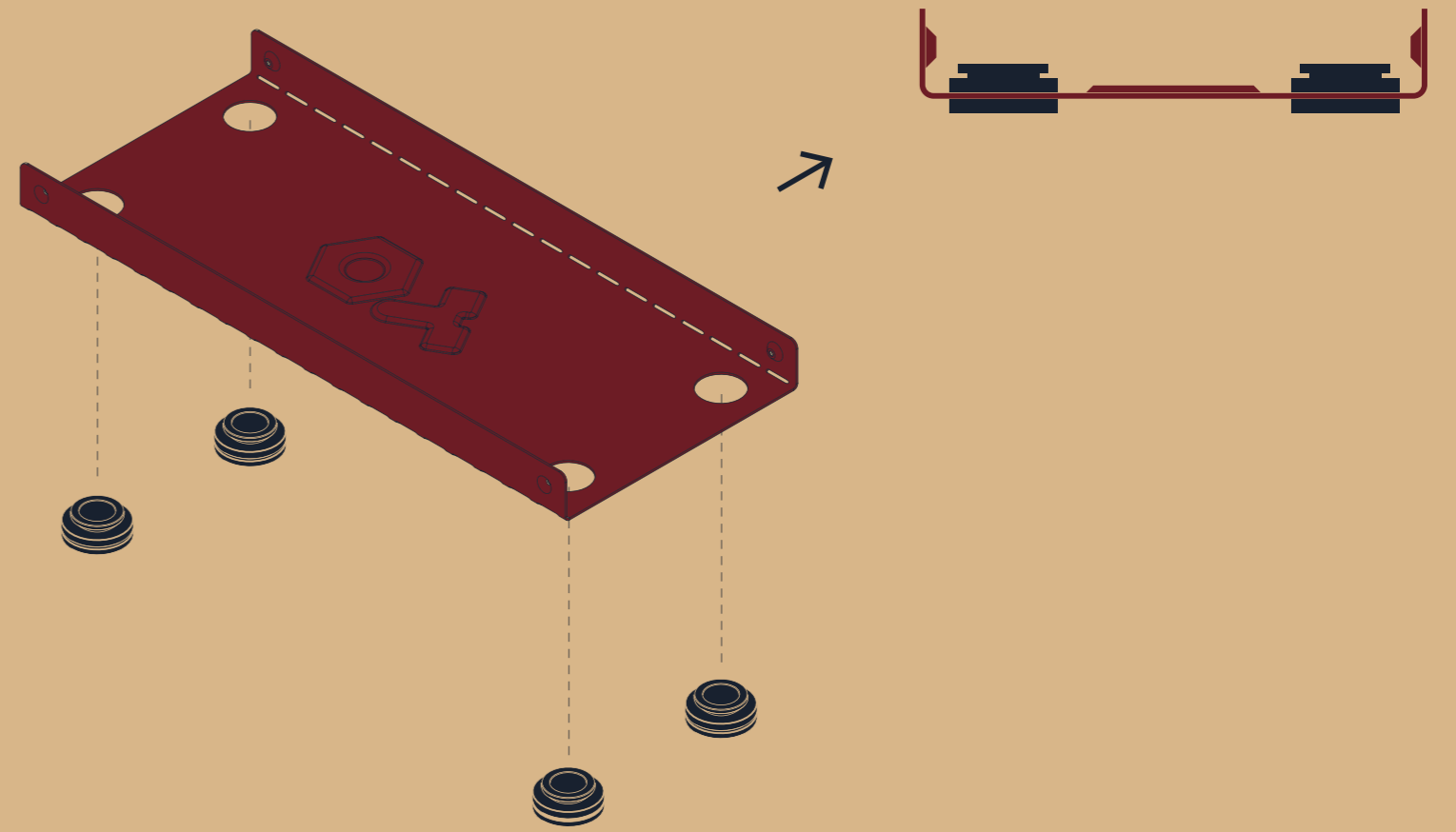
3



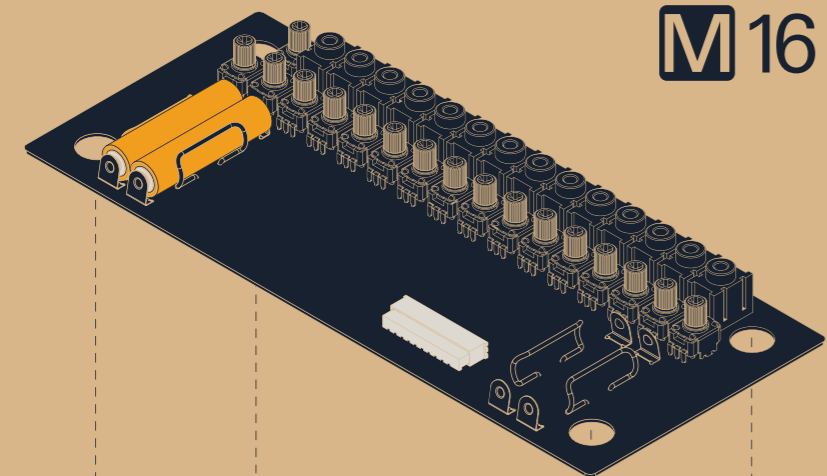
4



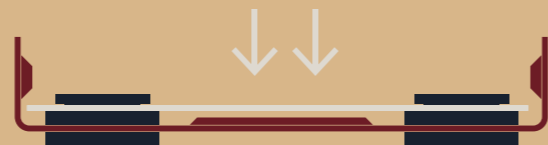
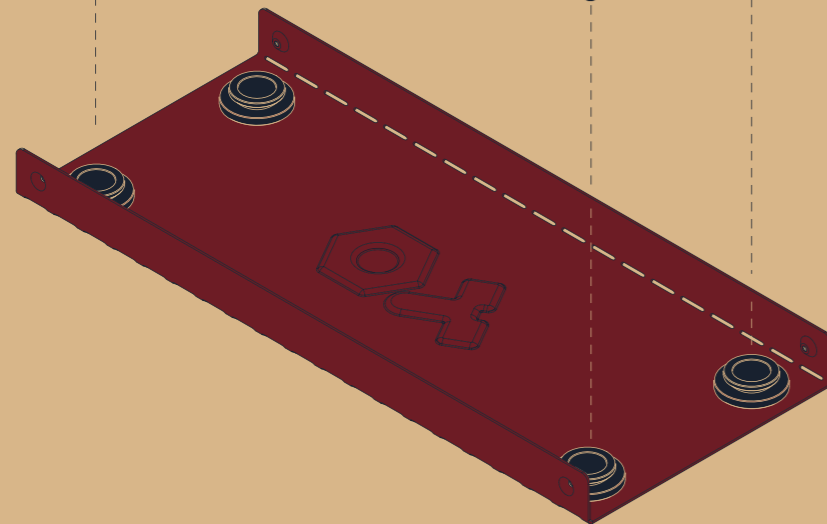
5



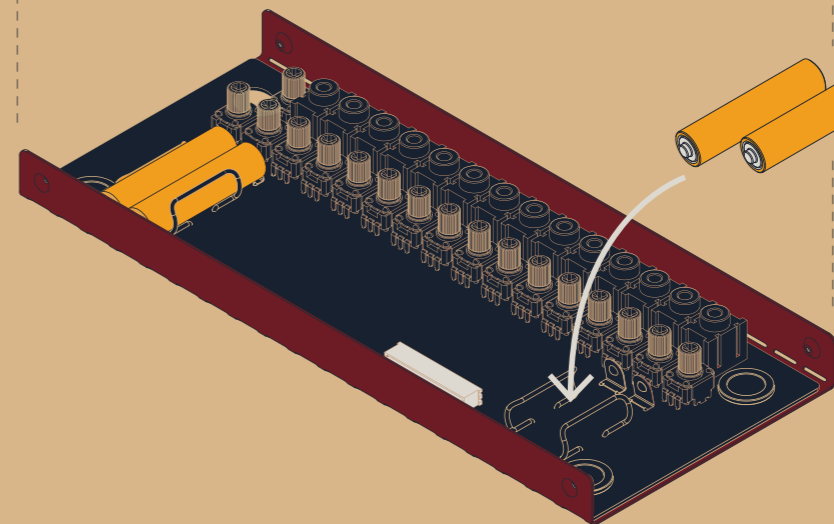
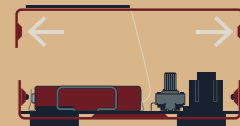
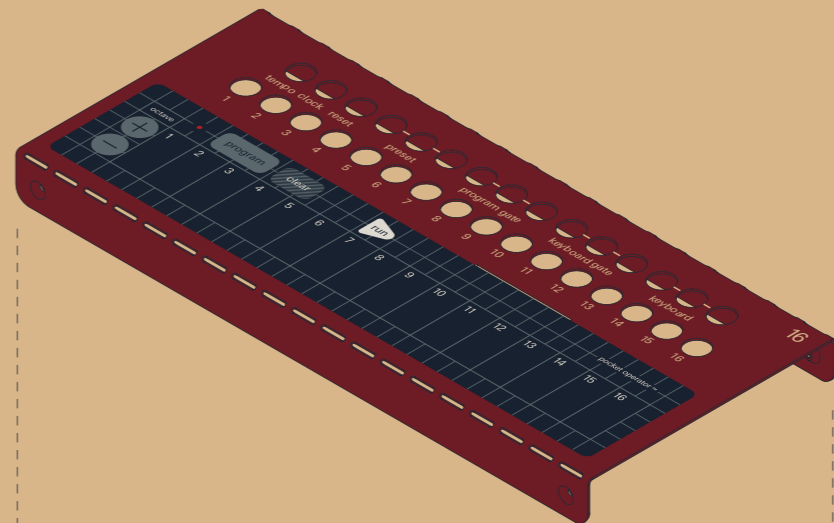
6



M 16

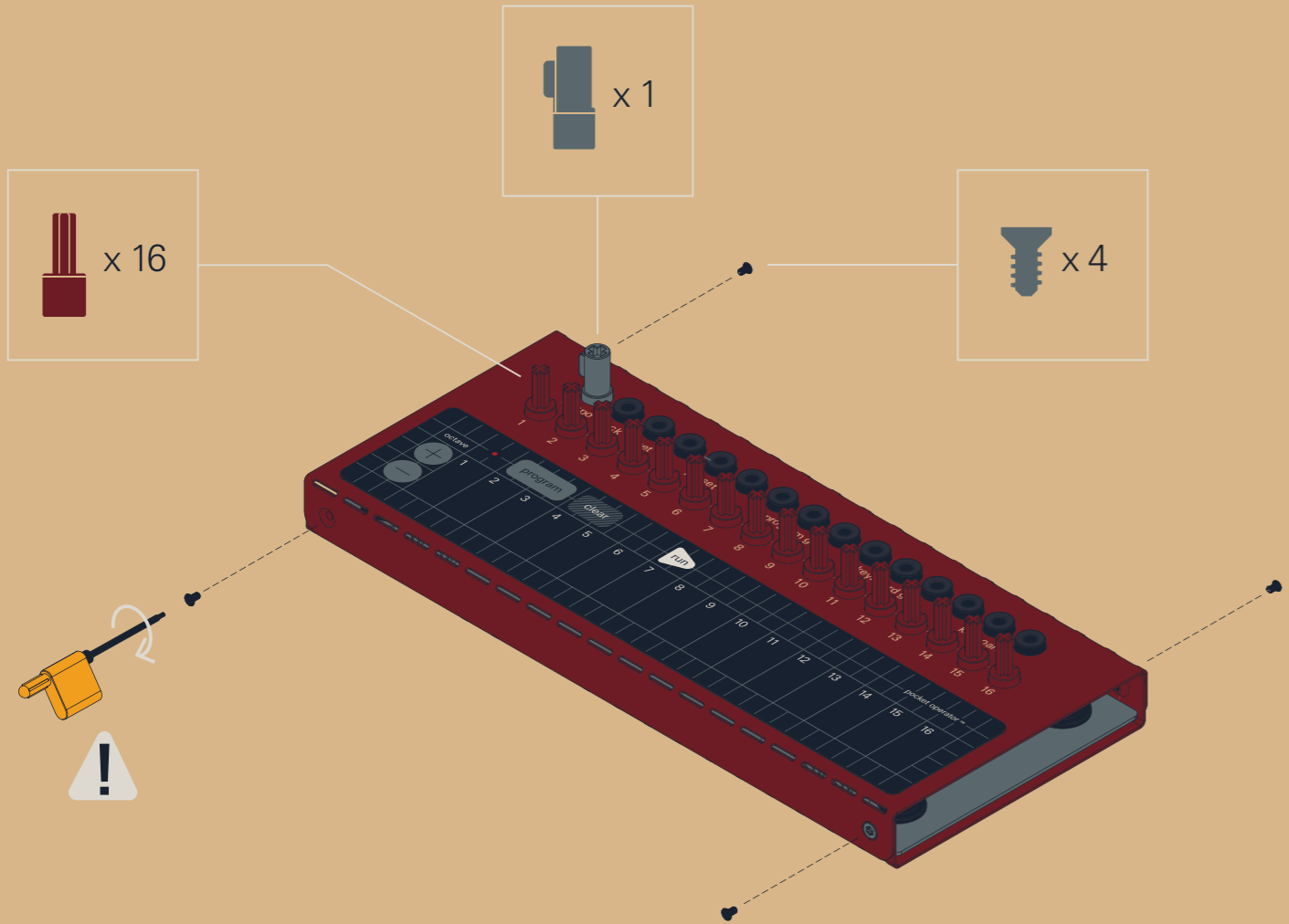


7

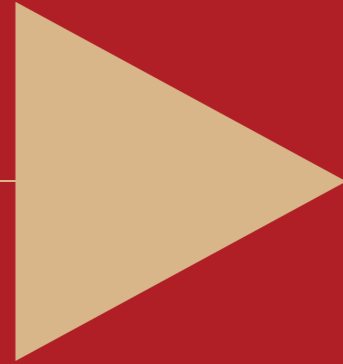


AA x 4

8

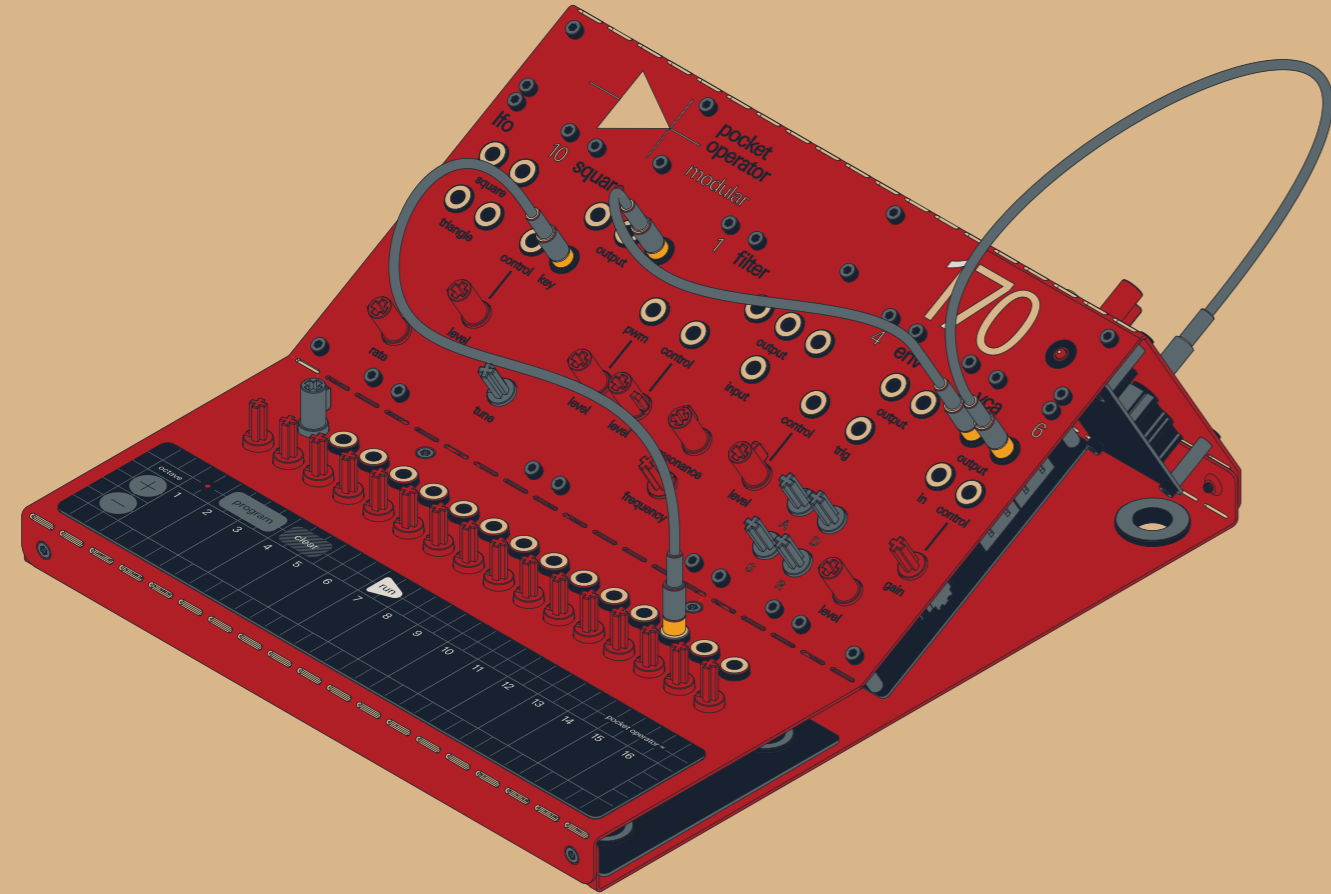


do not over tighten screws
schrauben nicht zu fest anziehen
ne pas trop serrer les vis
non stringere troppo le viti
ネジを締めすぎないでください



170

let's build



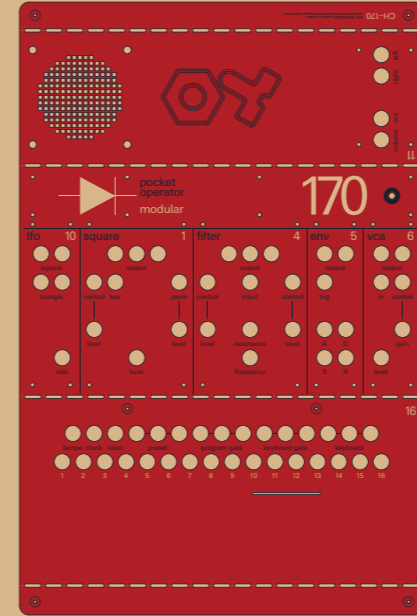
parts

identify parts
teile identifizieren
identifier les pièces
identificare le parti
部品を特定する

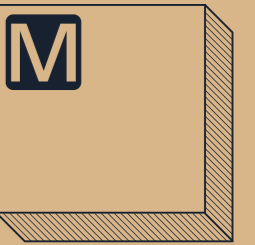
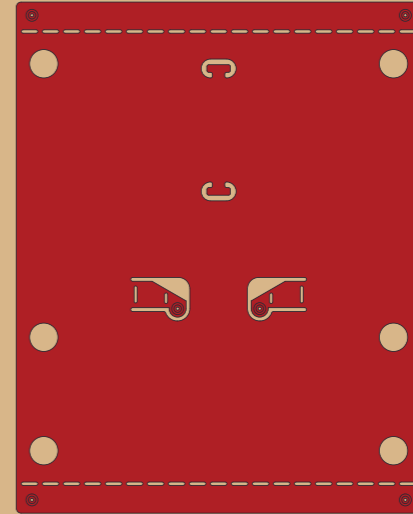


x 6

A

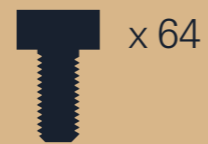


B



1, 4, 5, 6, 10,
11, 14, 16

M



x 64



x 32



x 18



x 8



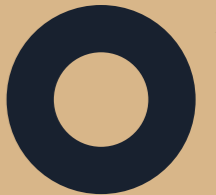
x 5



x 1

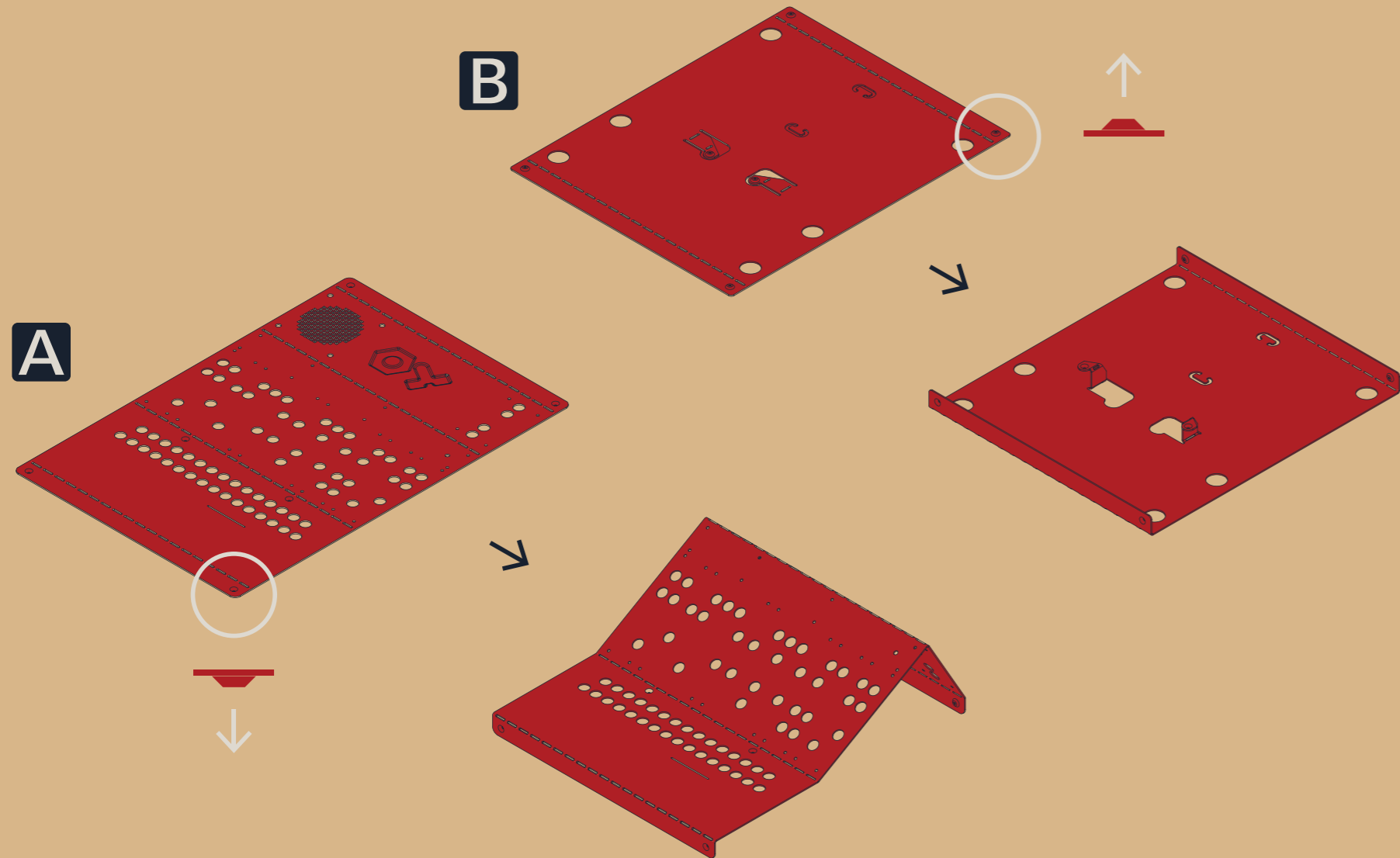


x 4

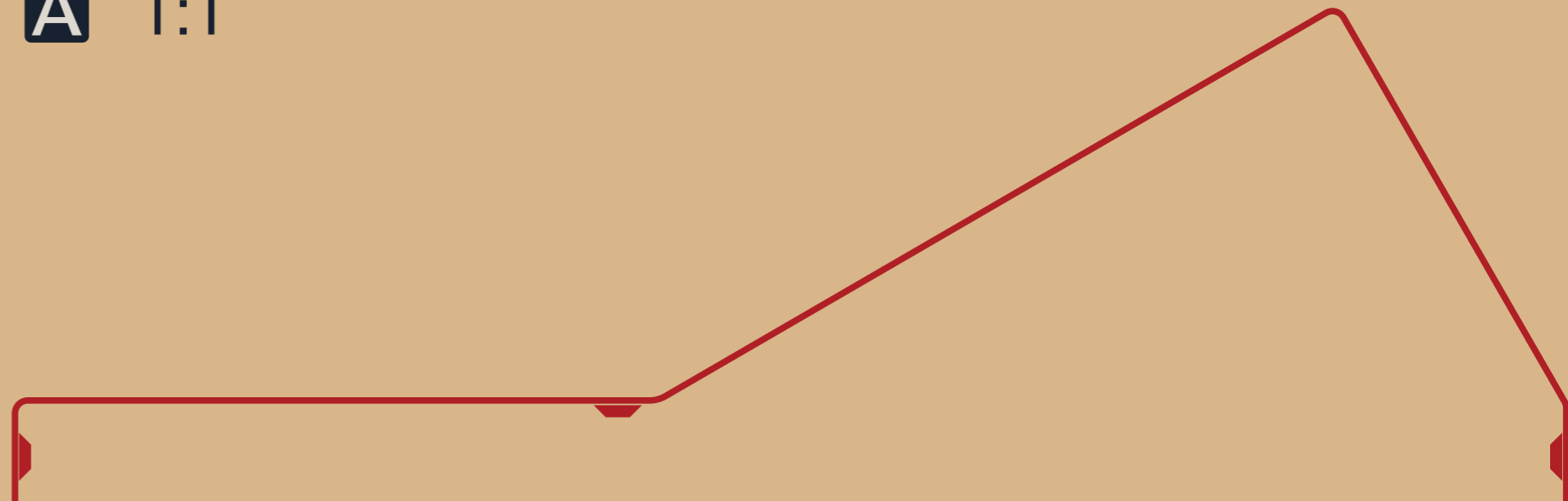


x 2

1



A 1:1



B

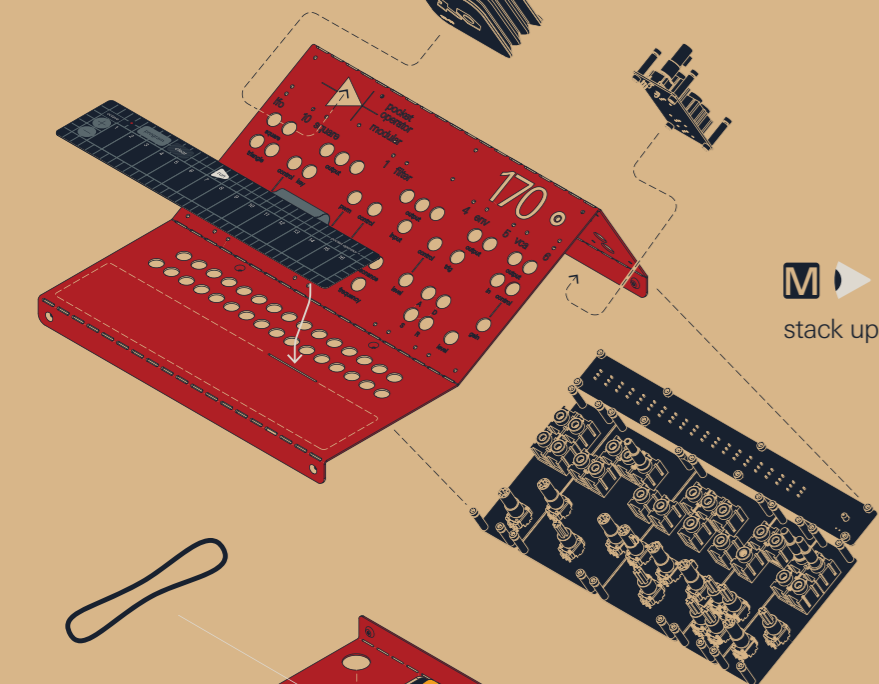


2

M speaker assembly

M 11

M stack up

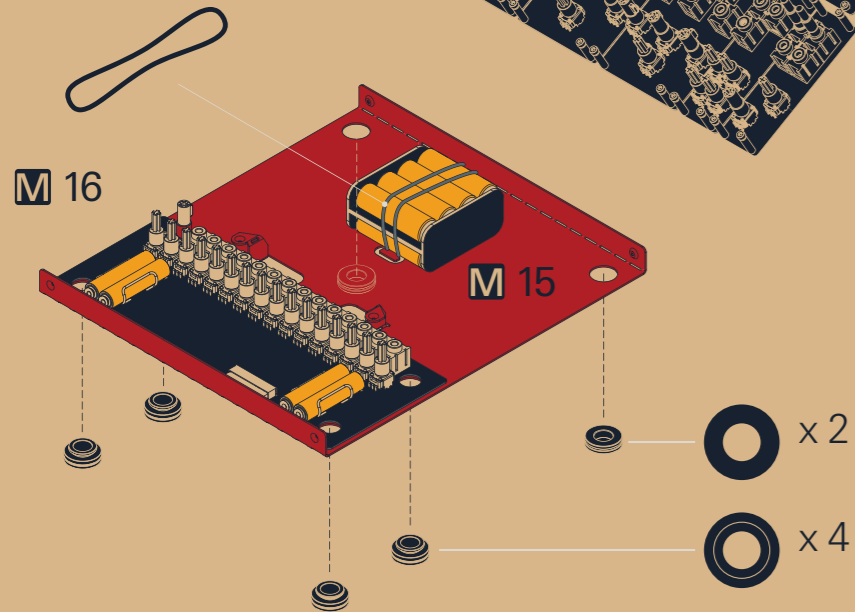


M 16

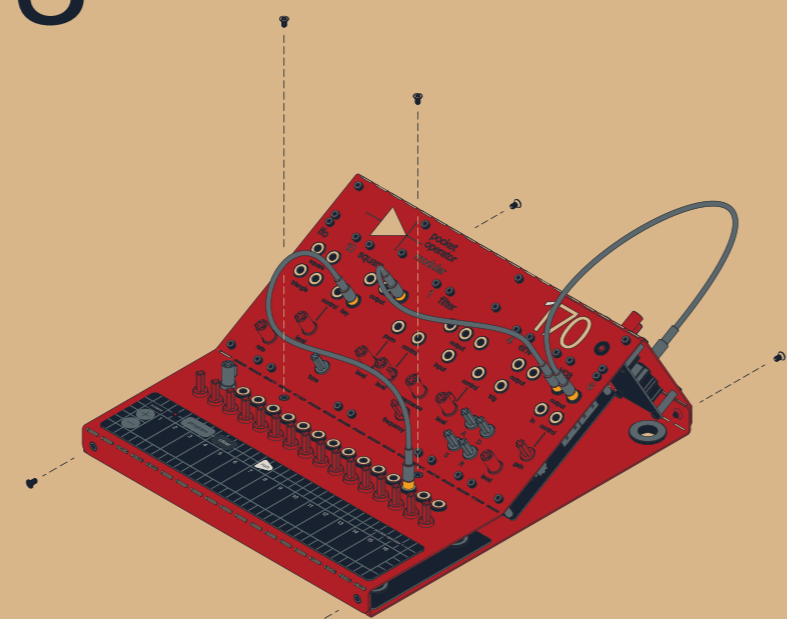
M 15

x 2

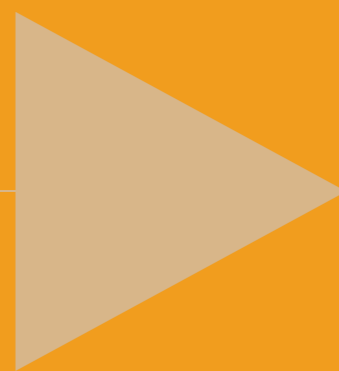
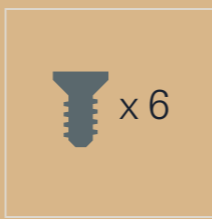
x 4



3

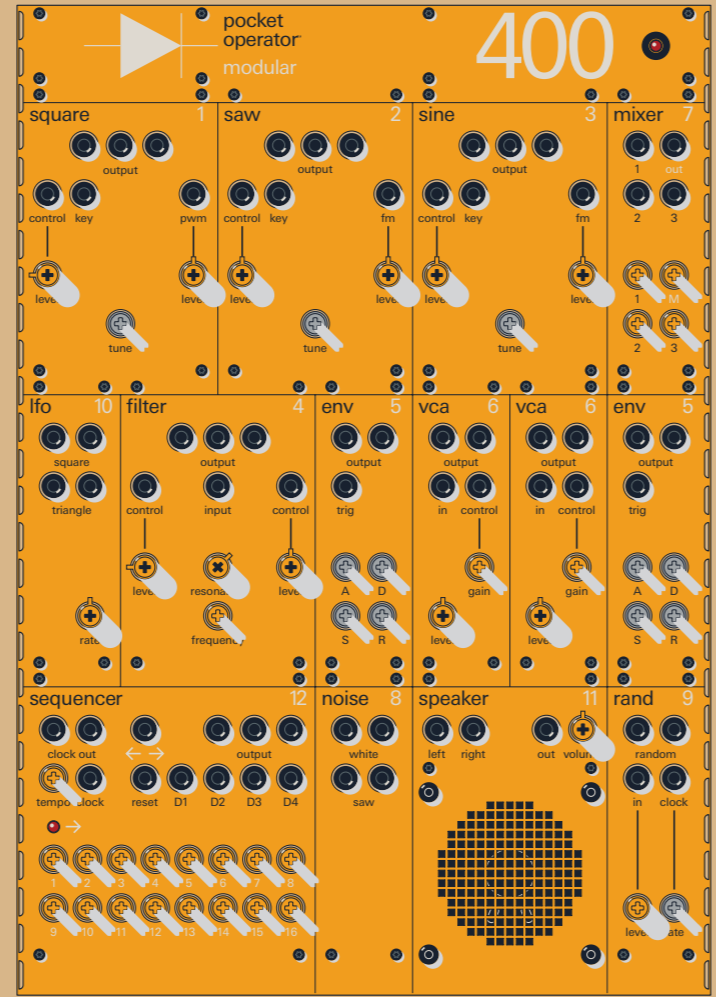
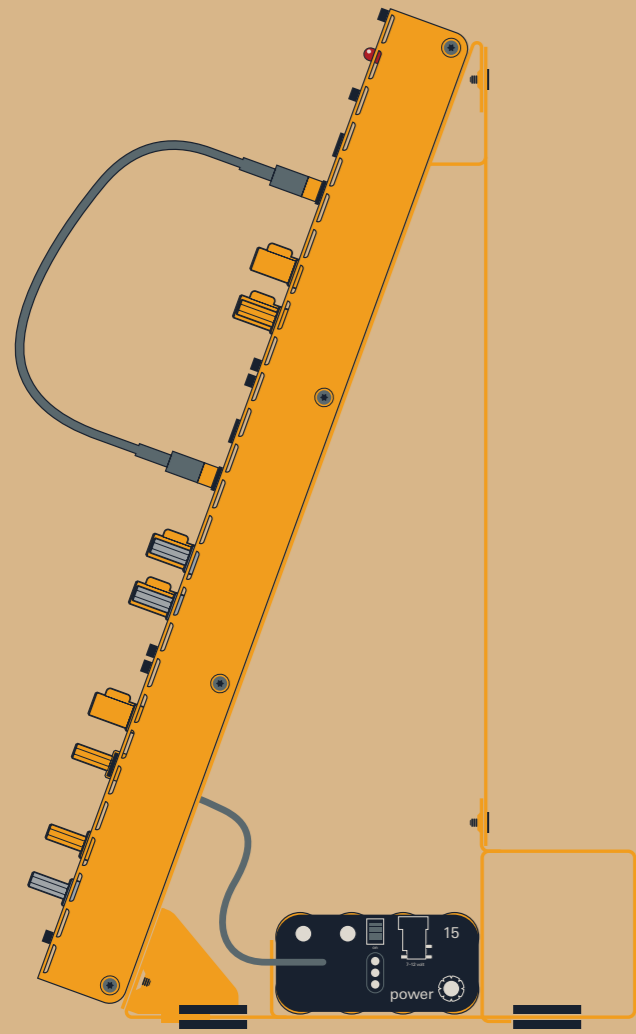


do not over tighten screws
 schrauben nicht zu fest anziehen
 ne pas trop serrer les vis
 non stringere troppo le viti
 ネジを締めすぎないでください



400

let's build

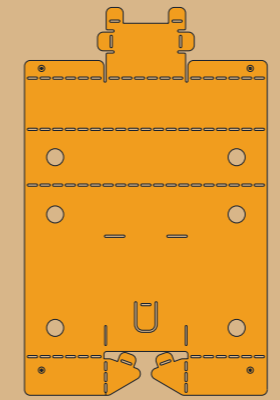


parts

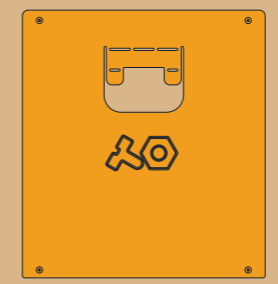
identify parts
teile identifizieren
identifier les pièces
identificare le parti
部品を特定する



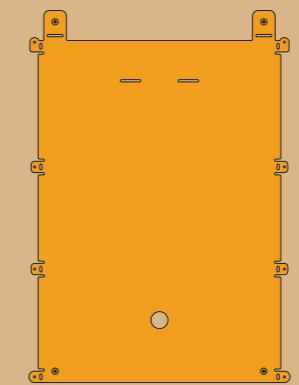
A



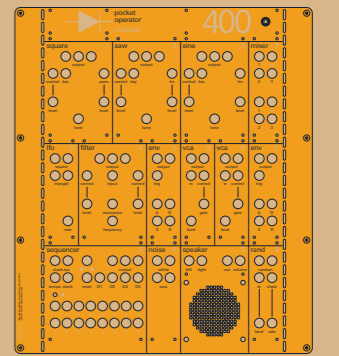
B



C



D

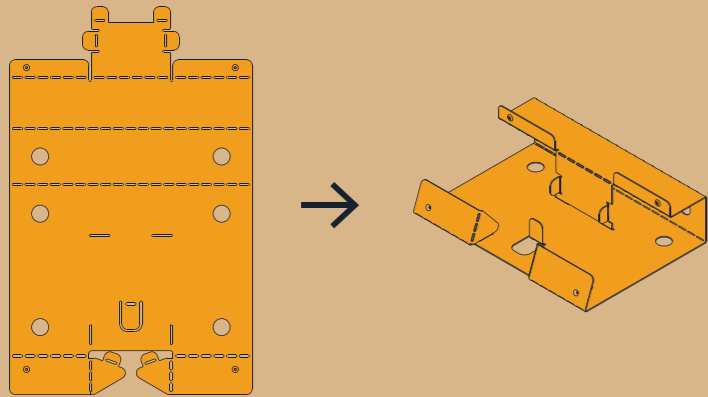


M

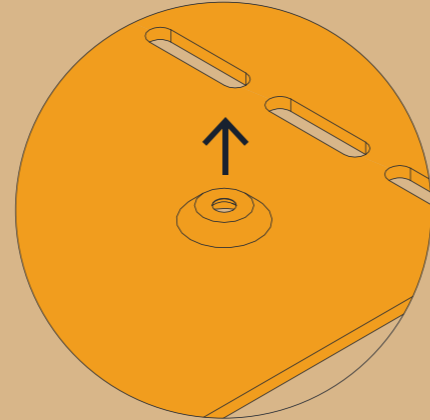
1-15



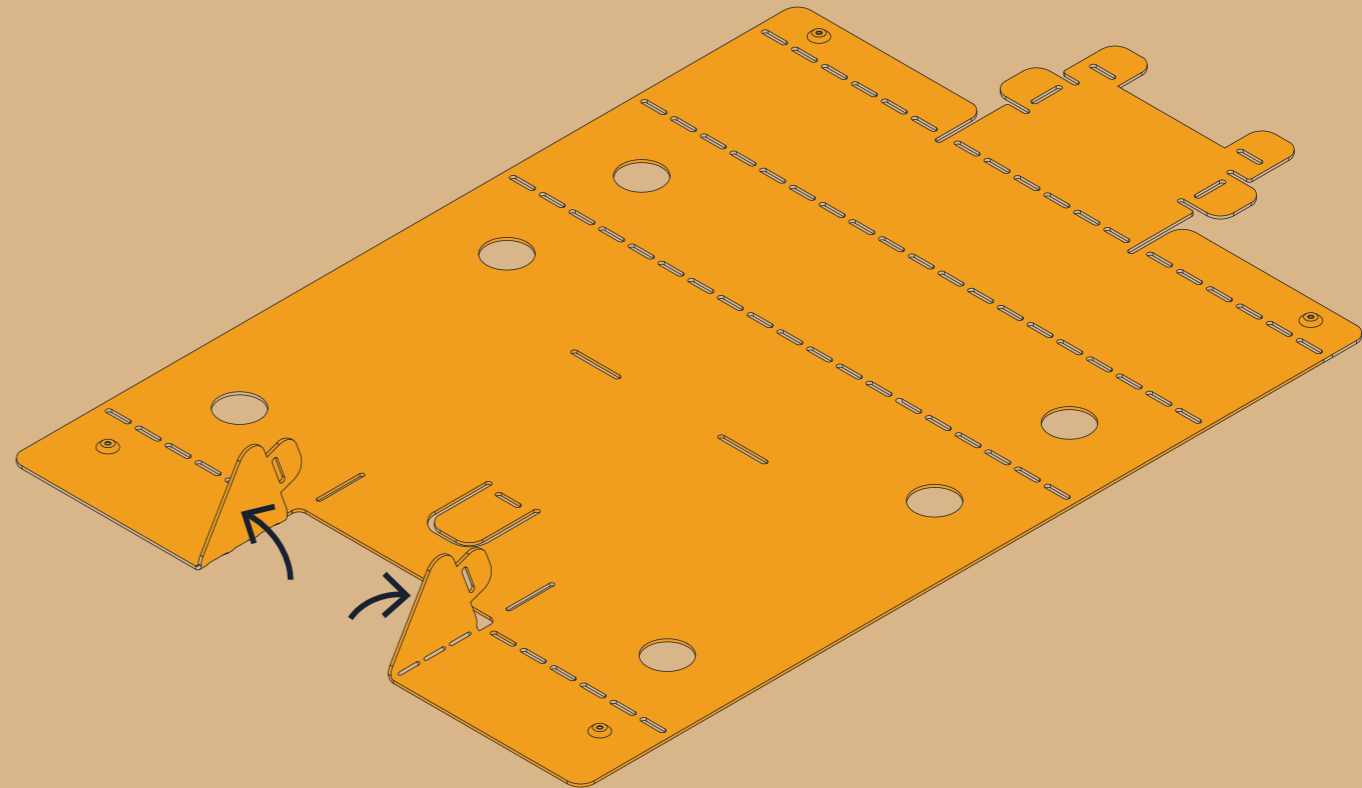
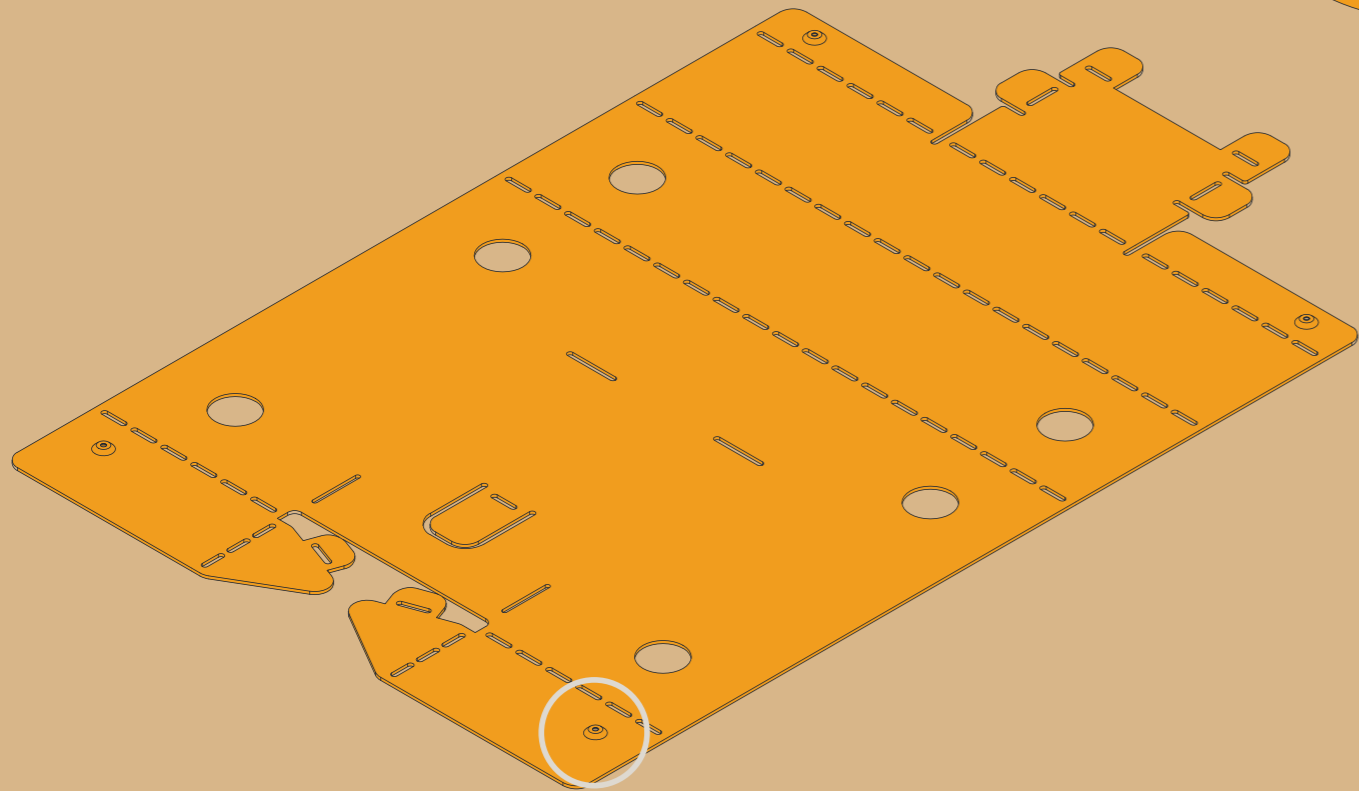
A



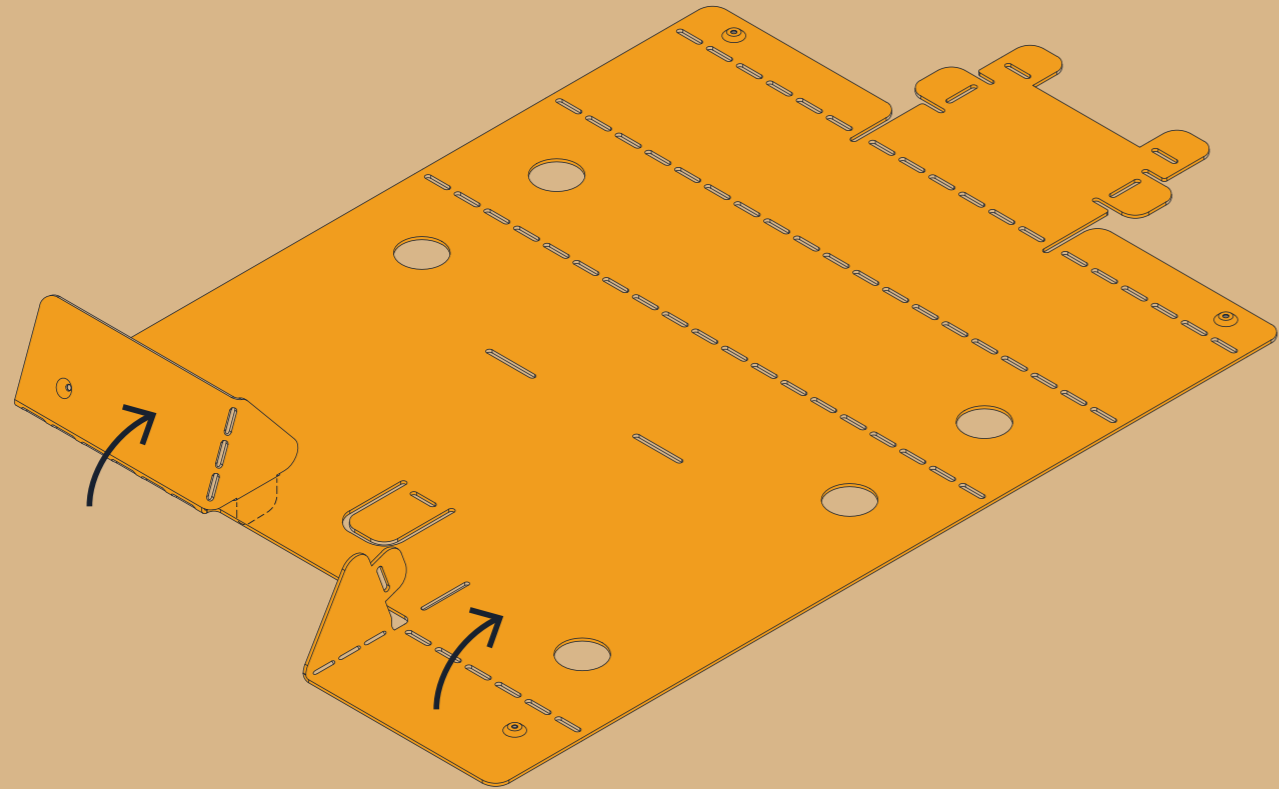
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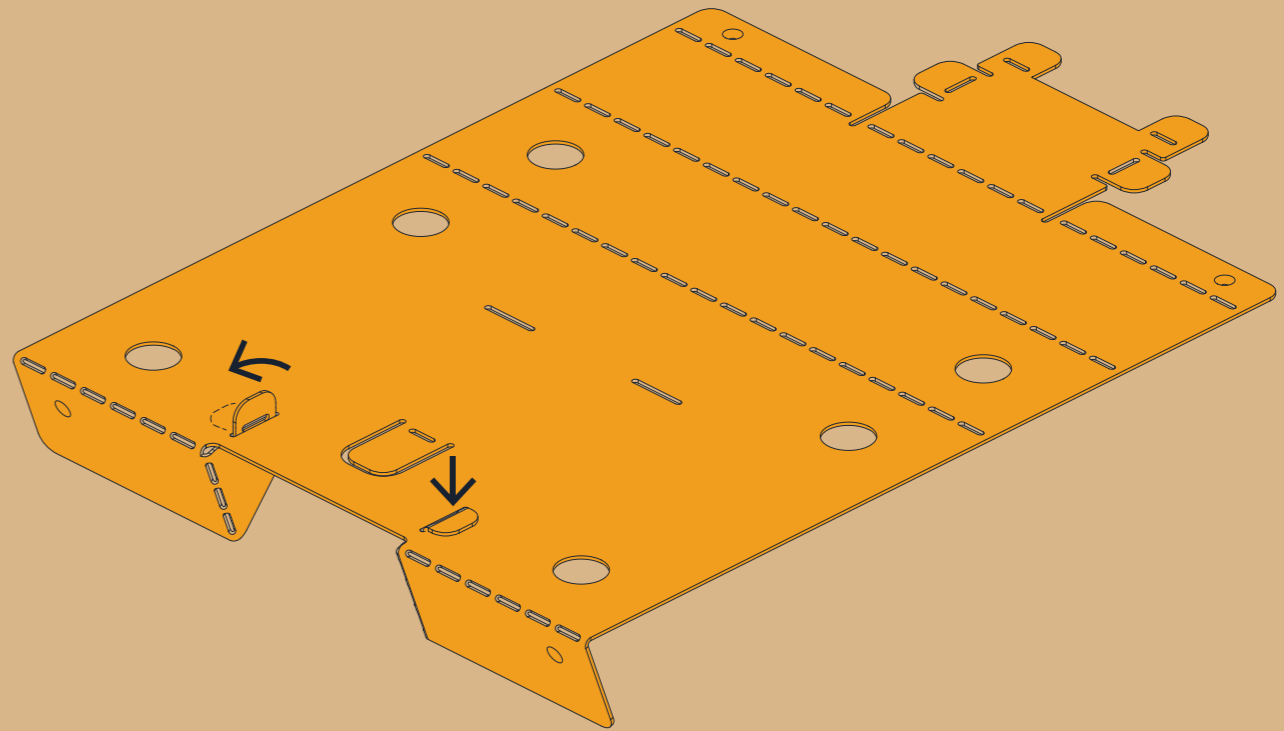
1



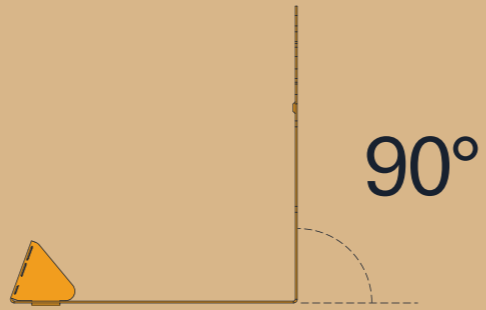
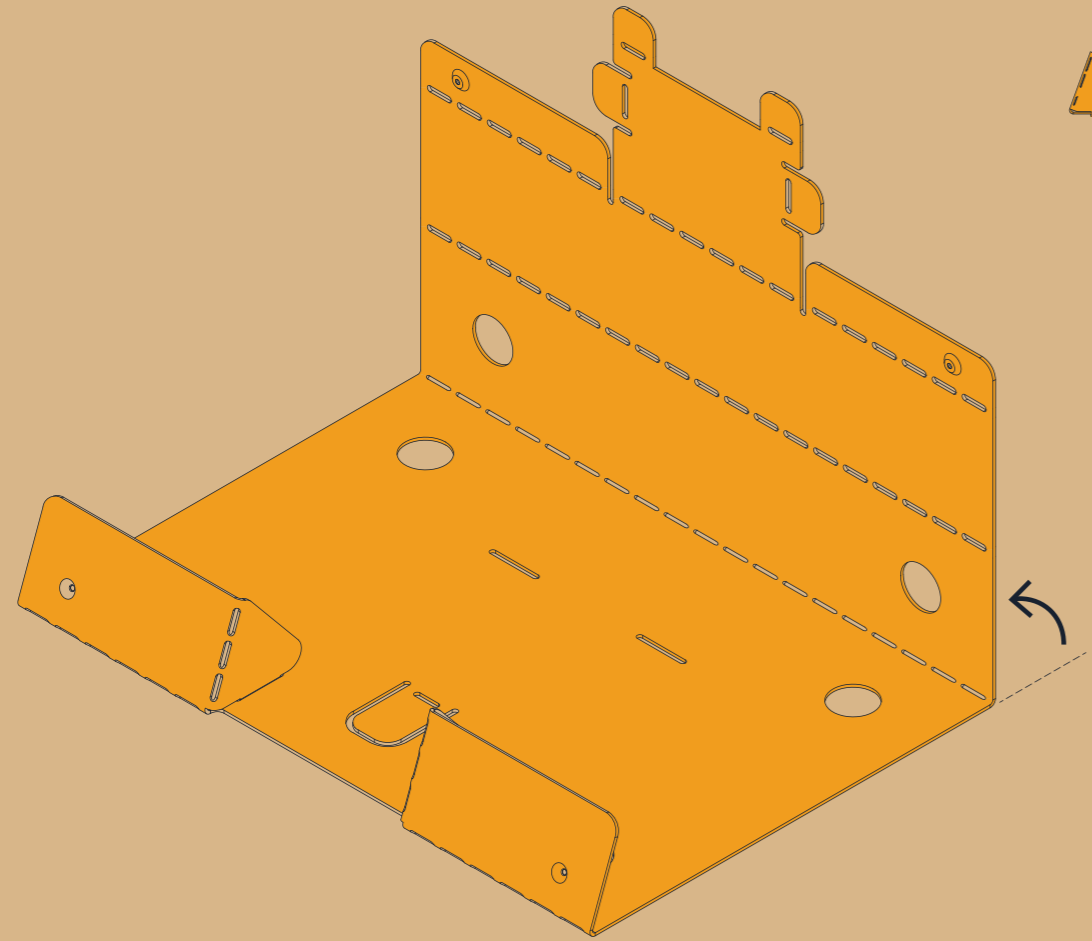
3



4



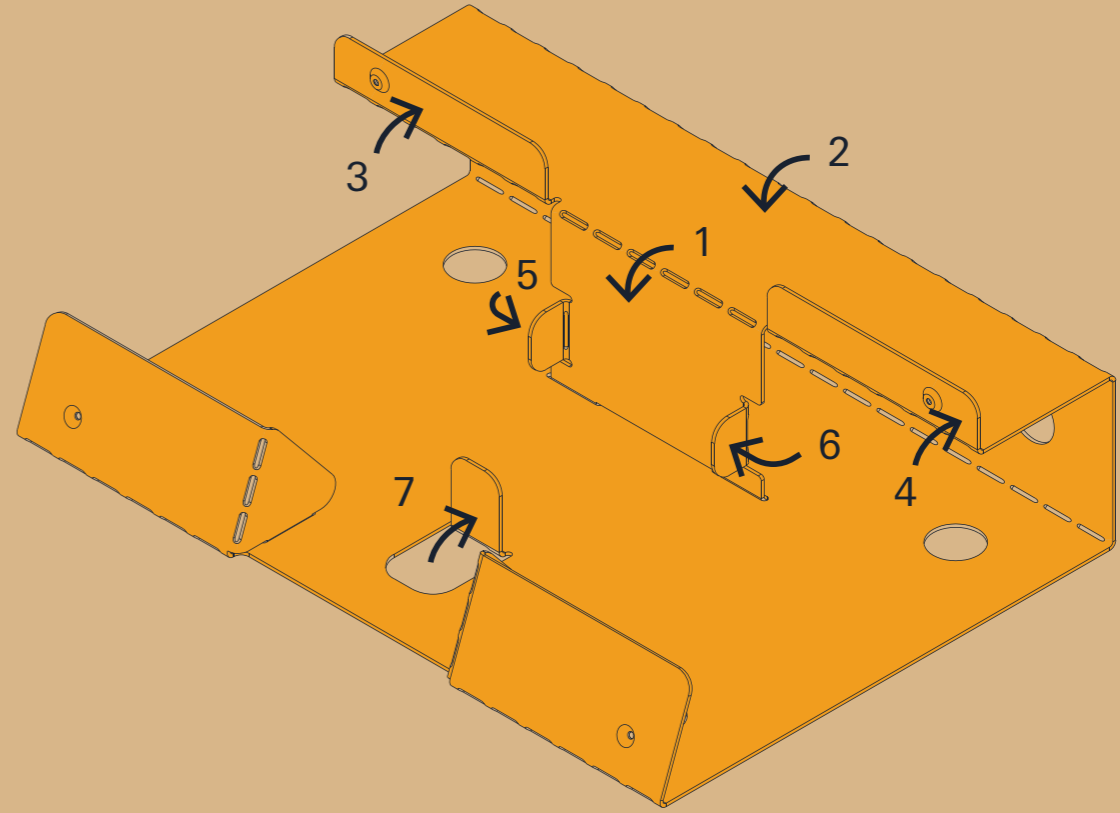
5



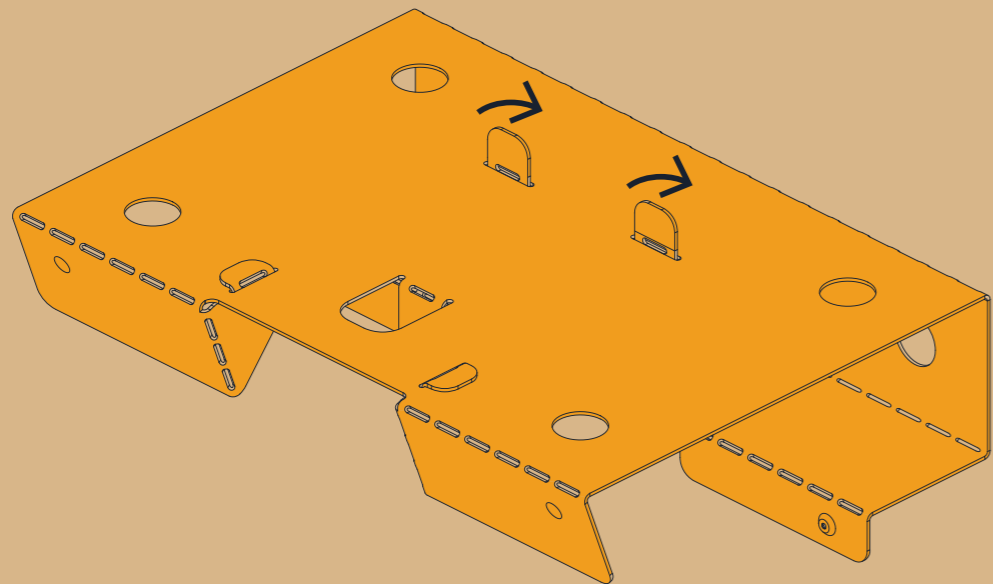
90°

6

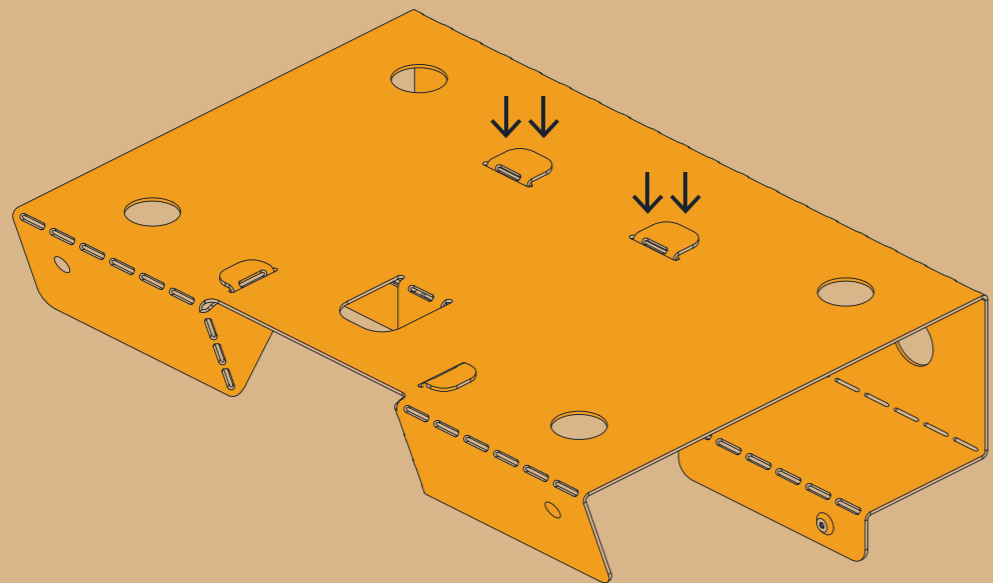
1-7 90°



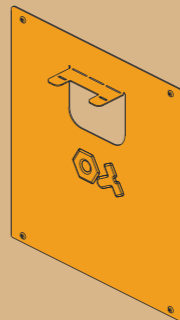
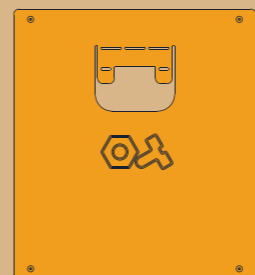
7



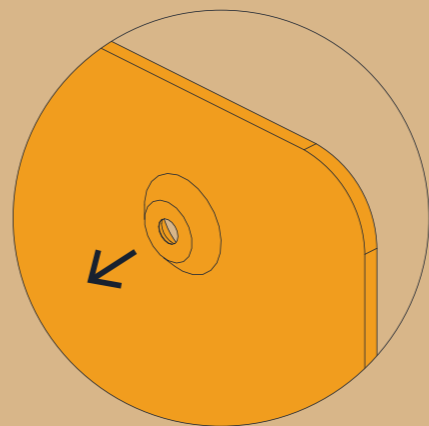
8



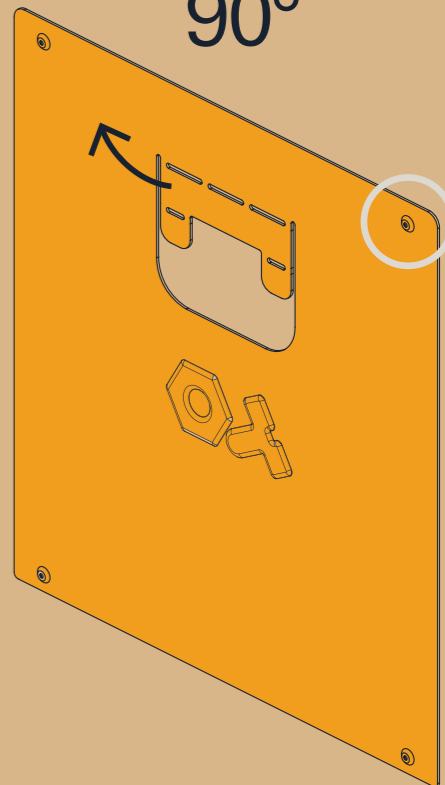
B



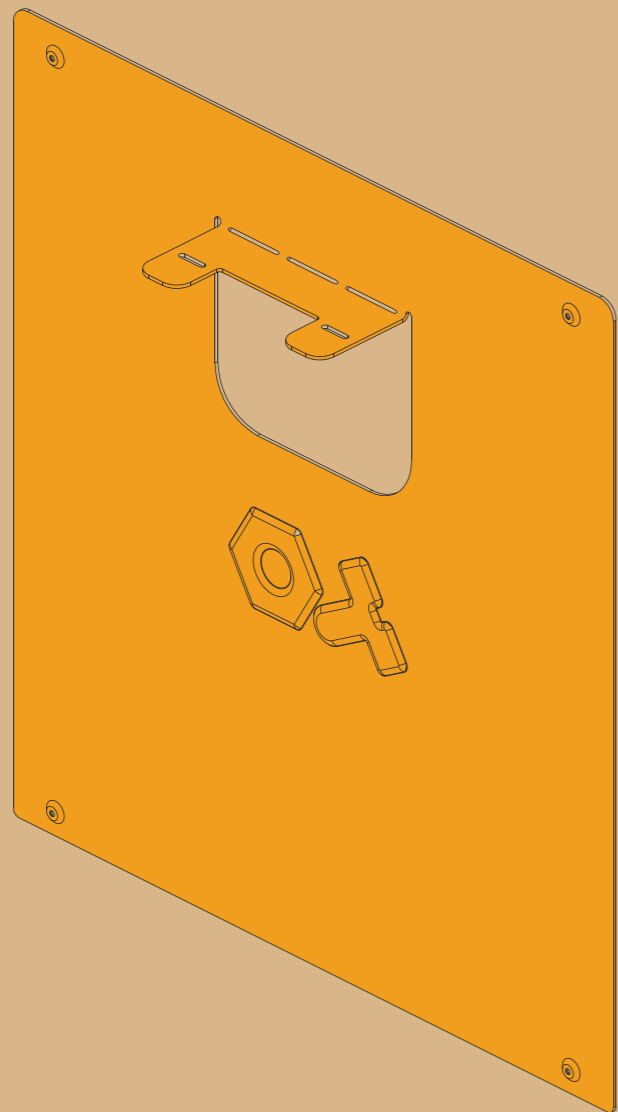
9



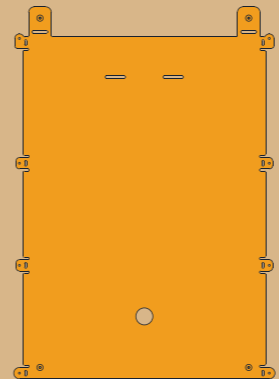
90°



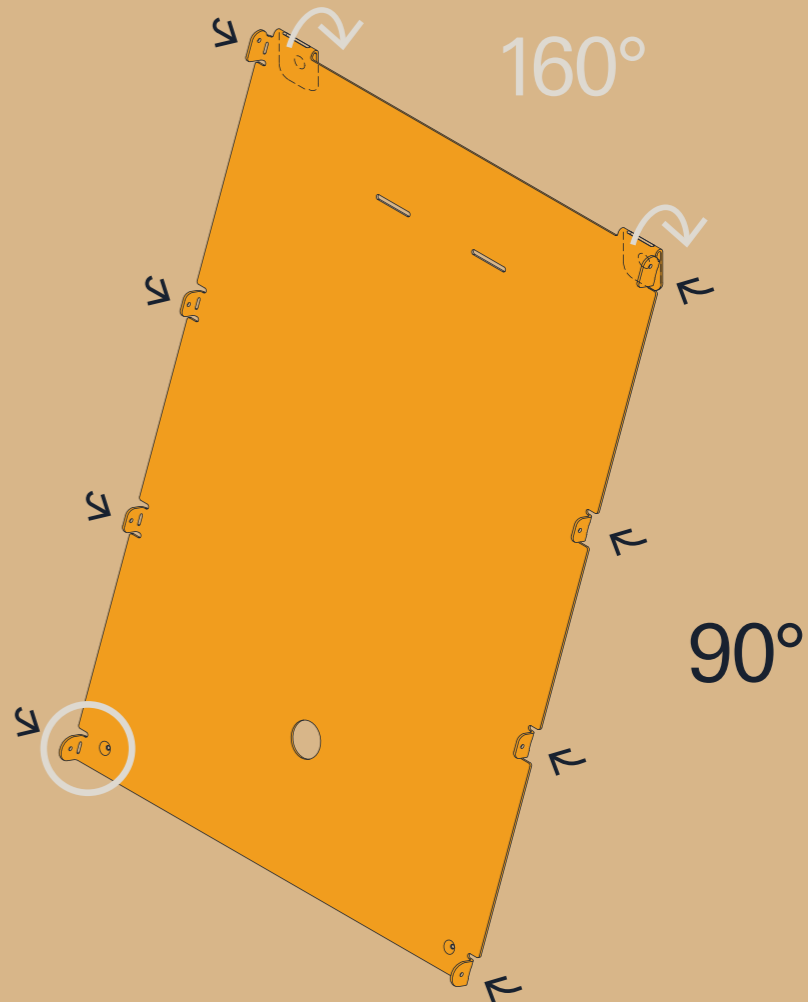
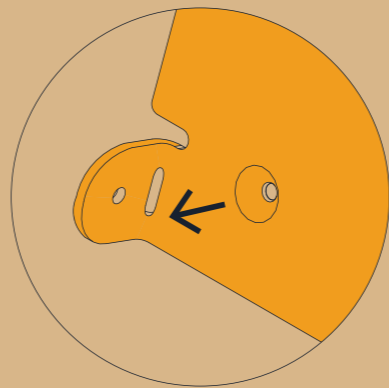
10



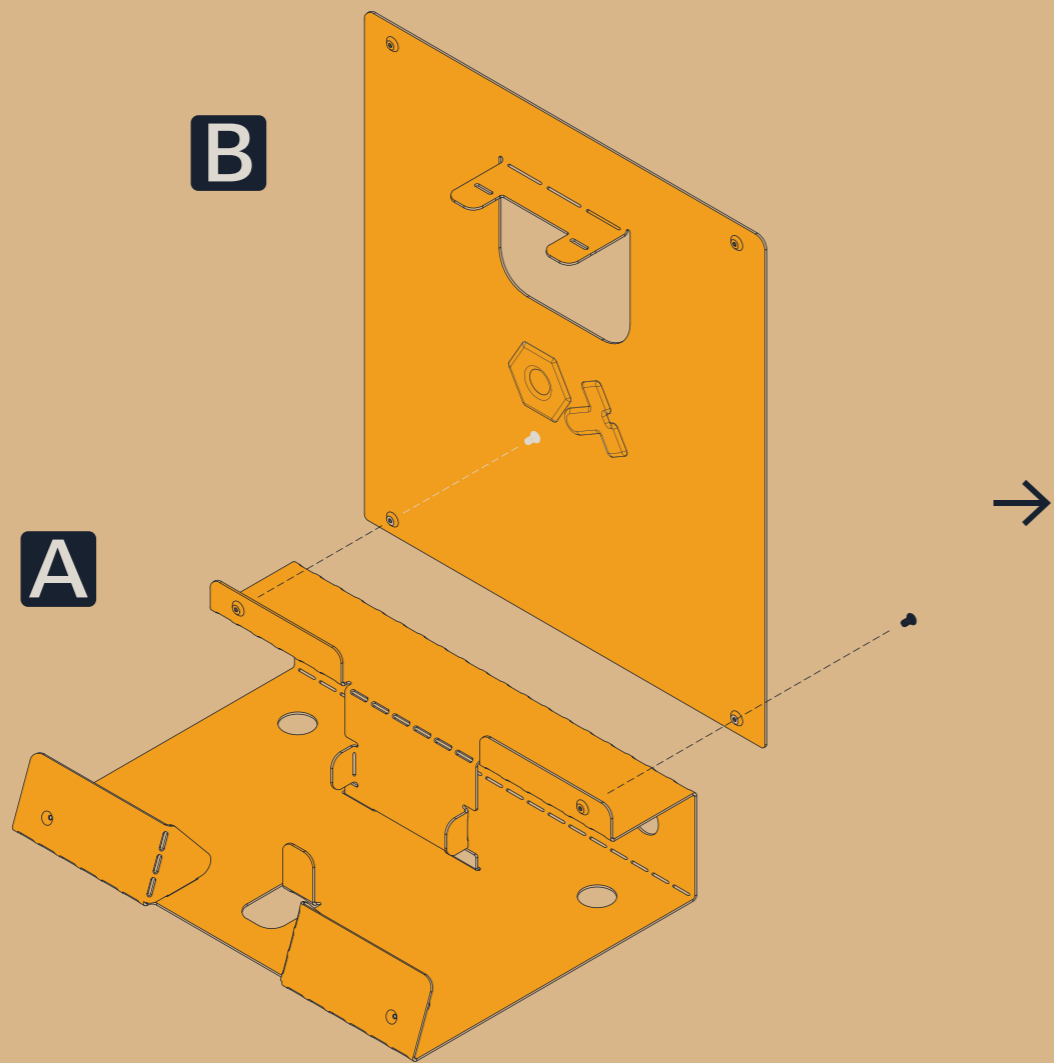
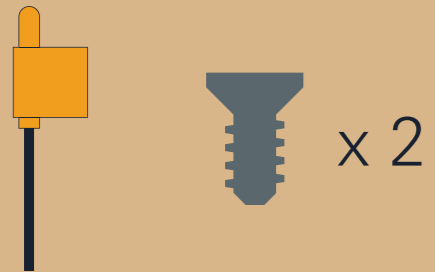
C



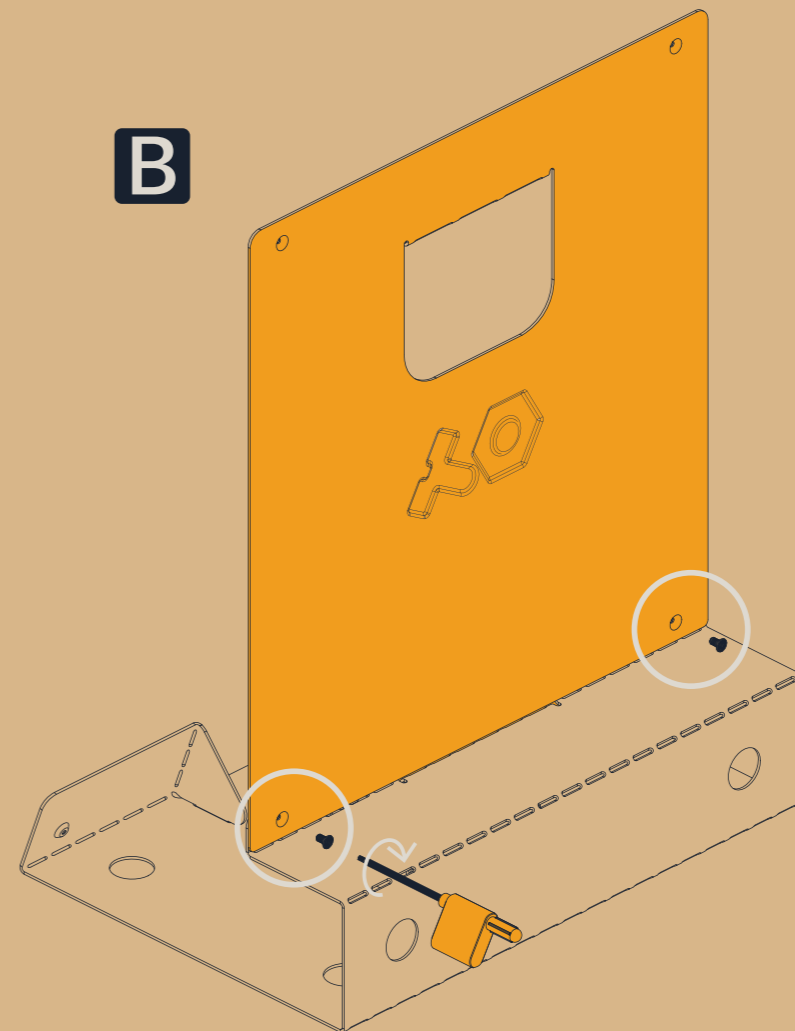
11



12

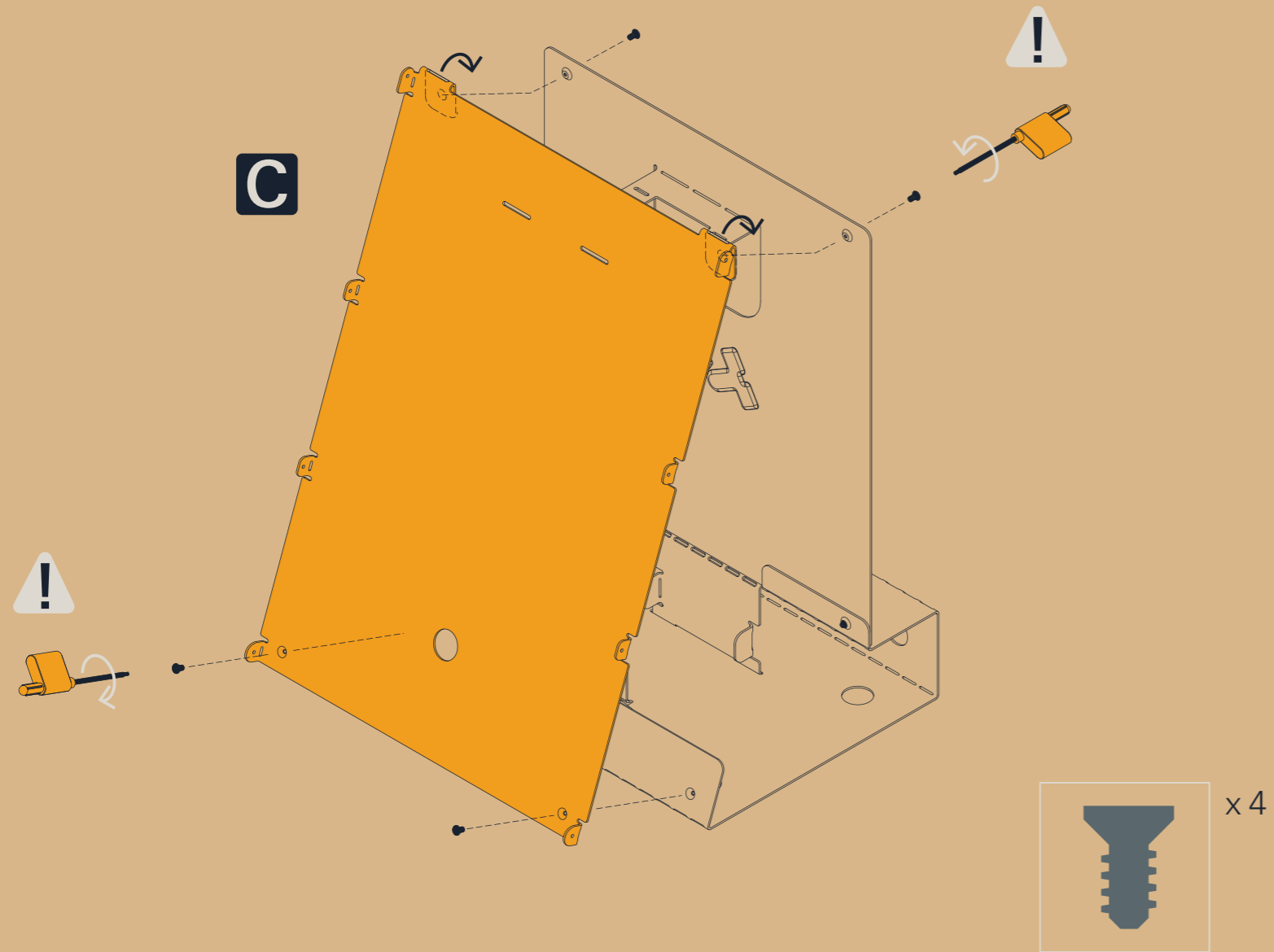


13

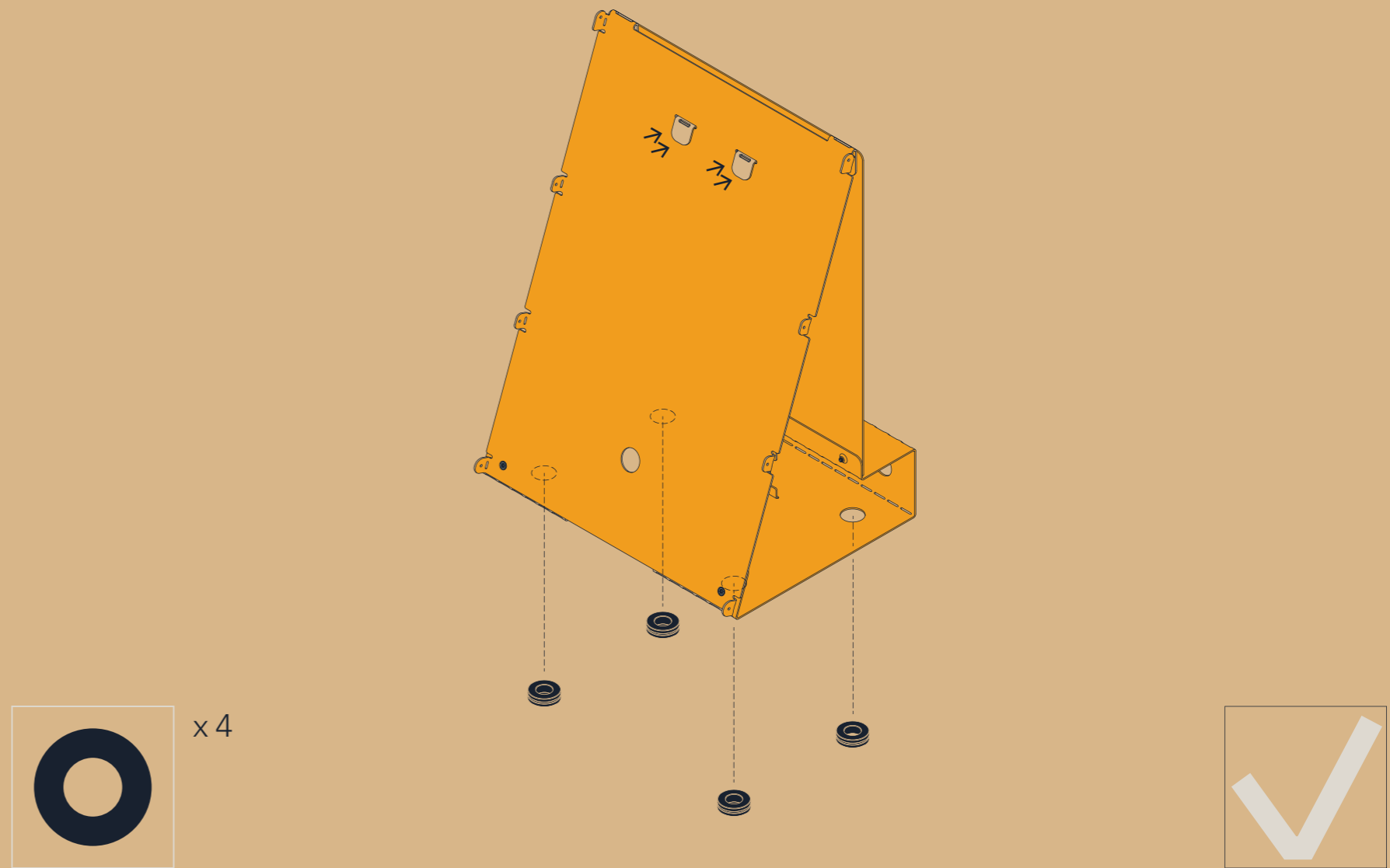


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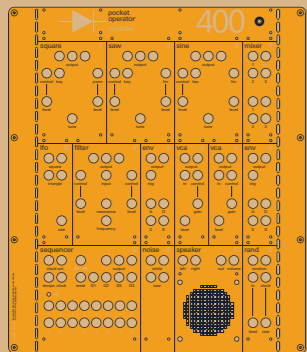
14



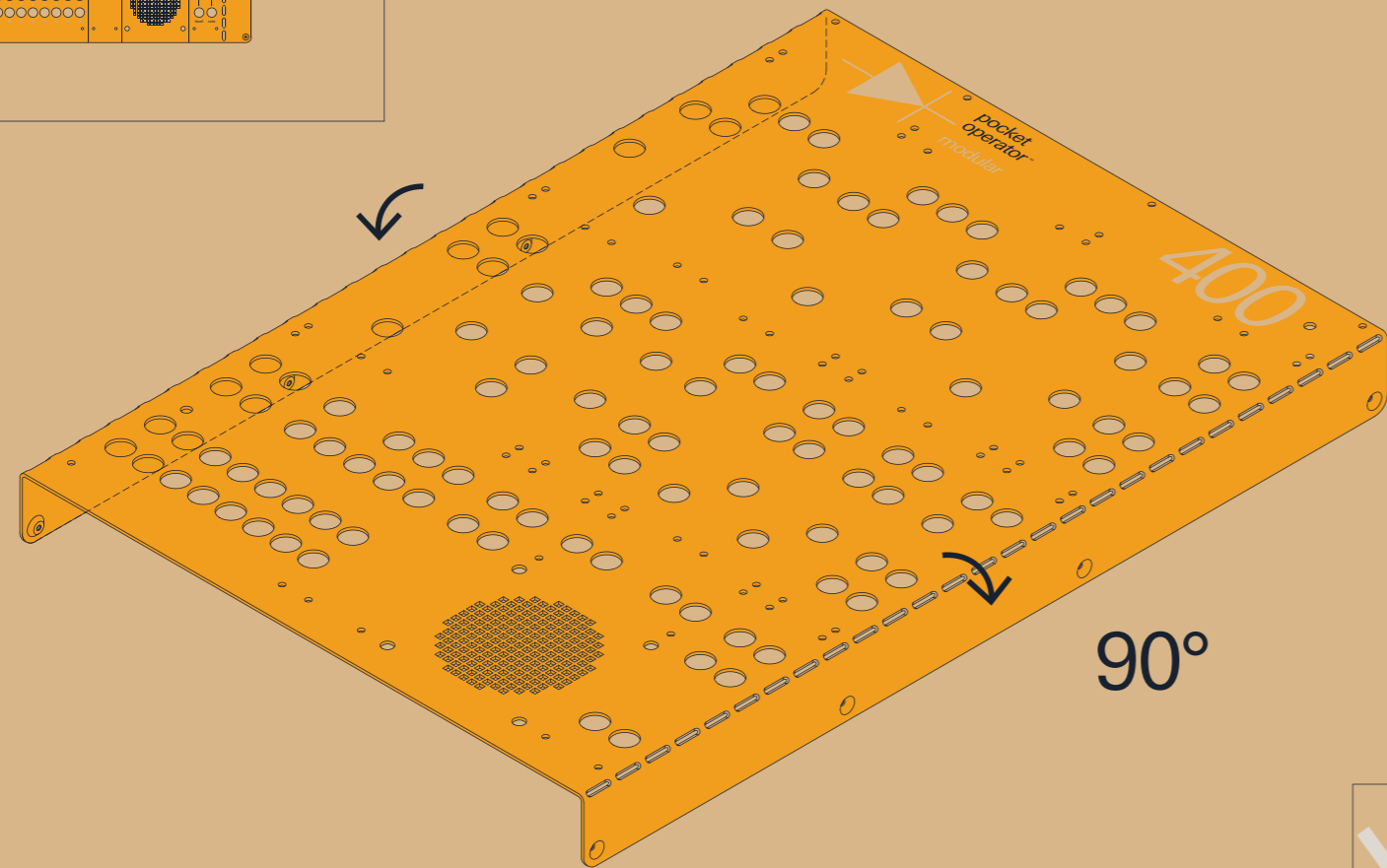
15



D



16

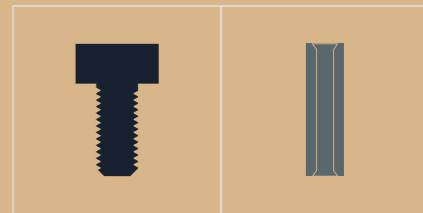
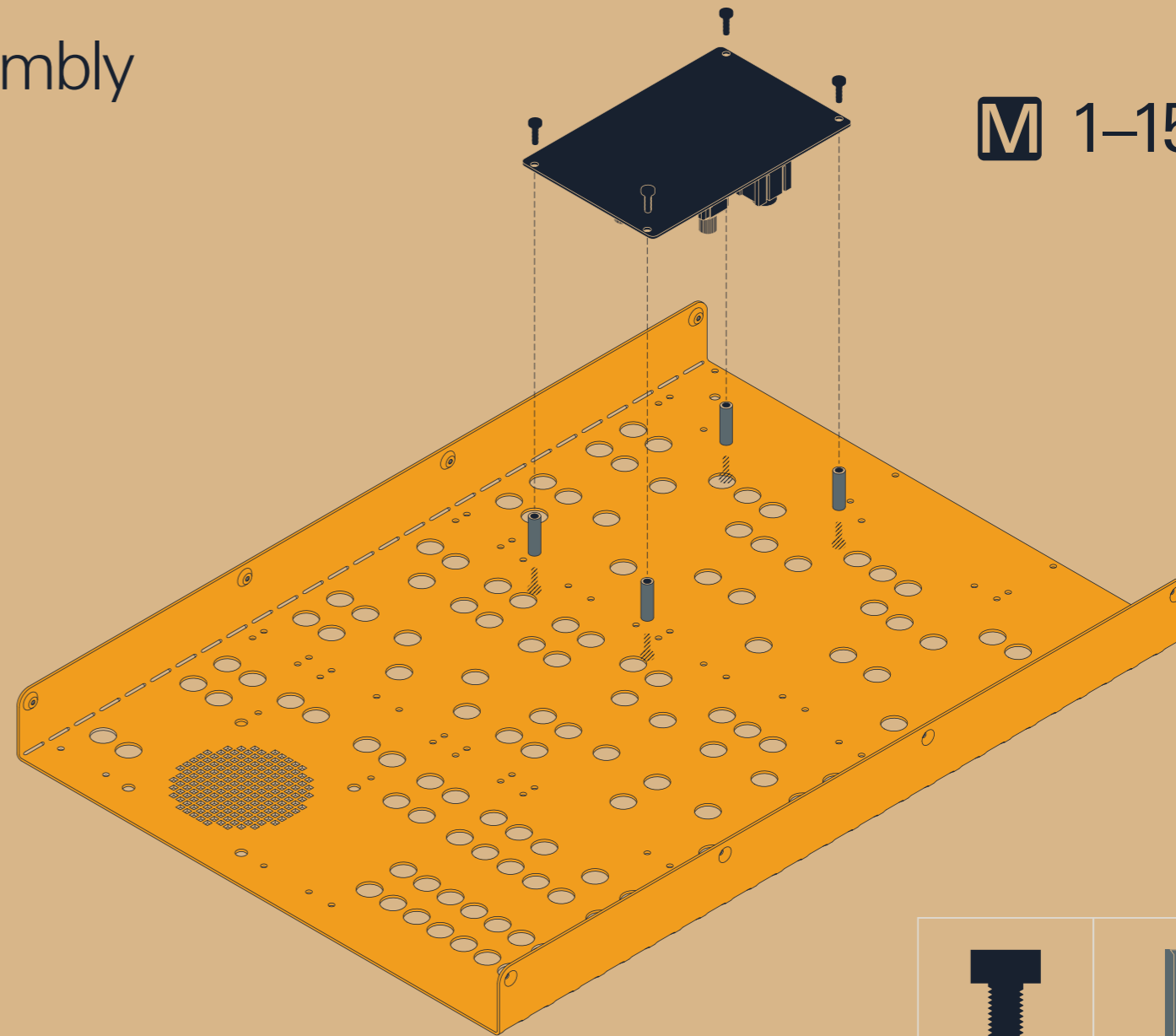


90°



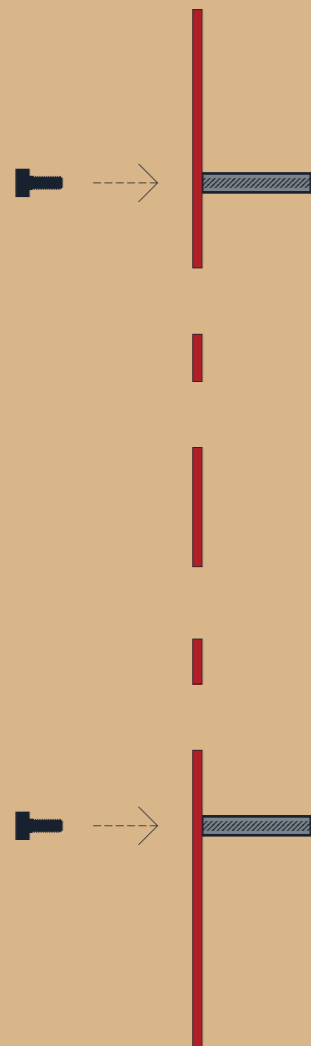
assembly

M 1-15

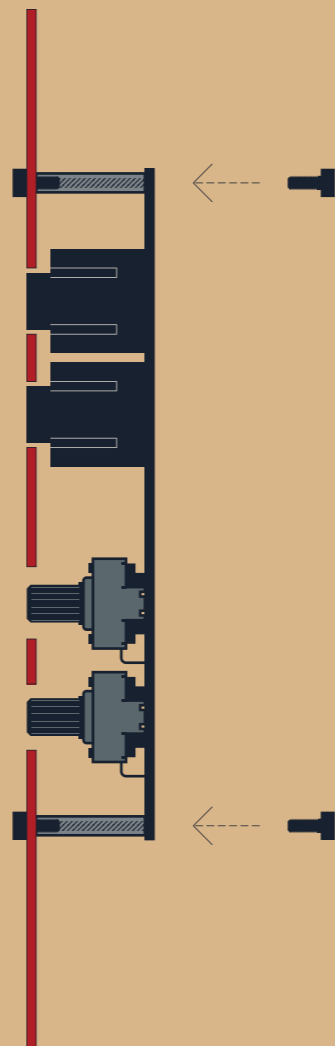


module
assembly

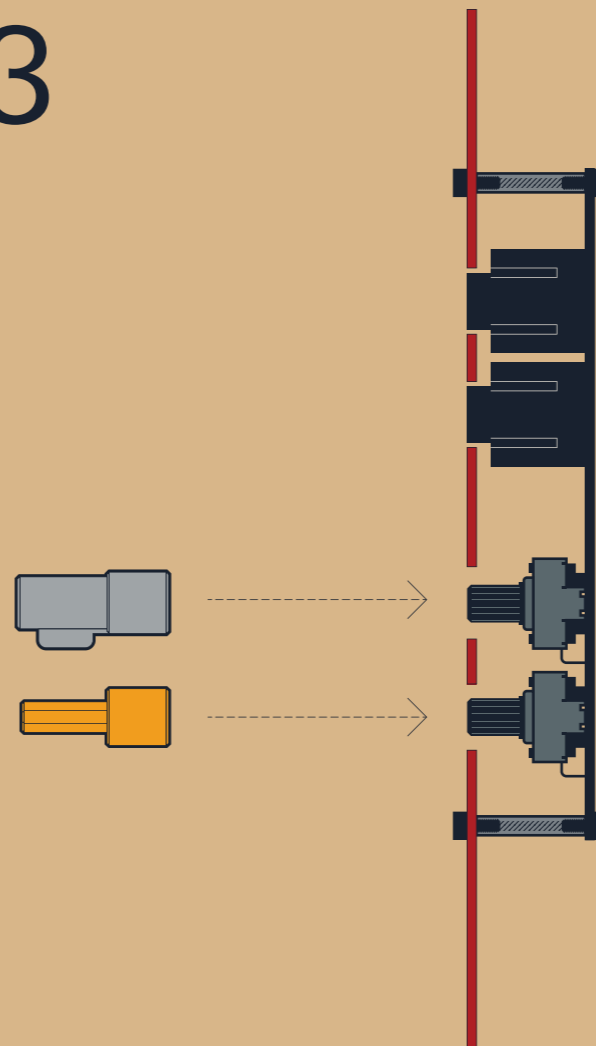
1



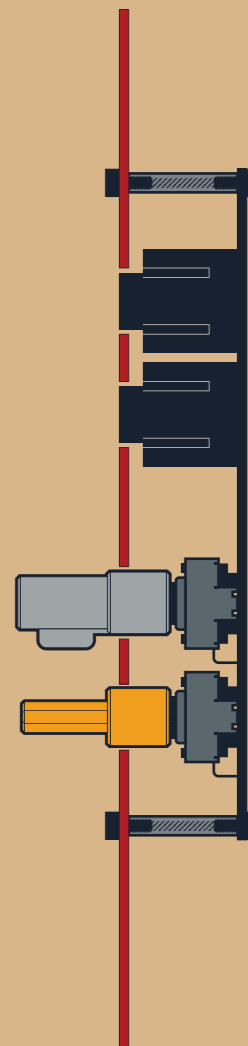
2



3

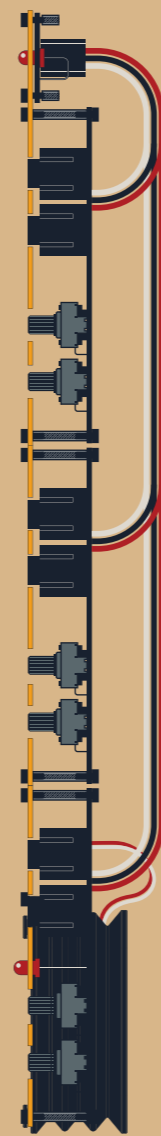
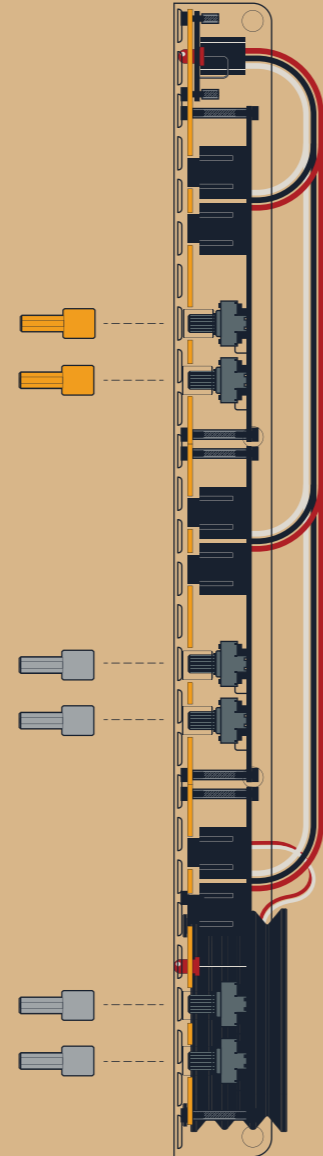
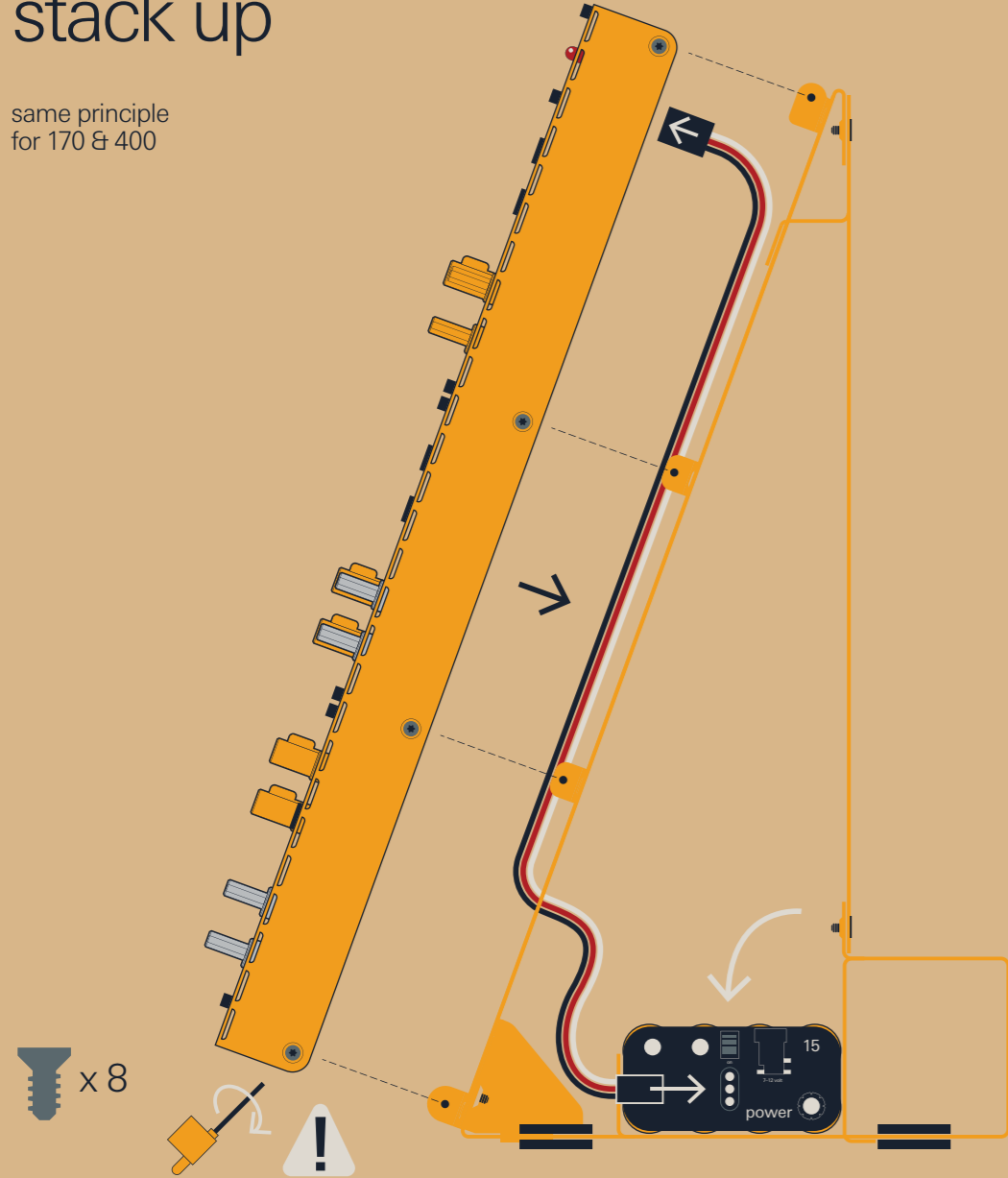


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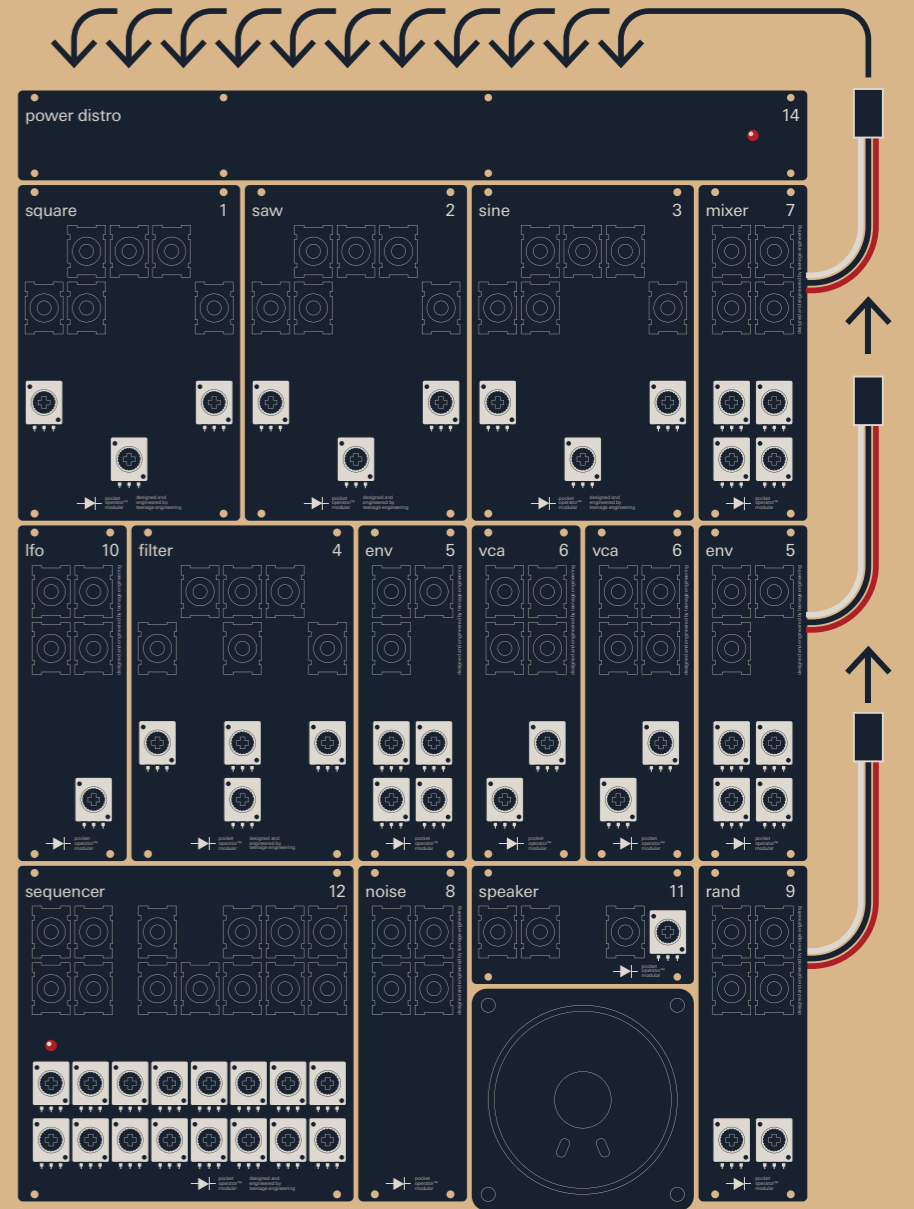


stack up

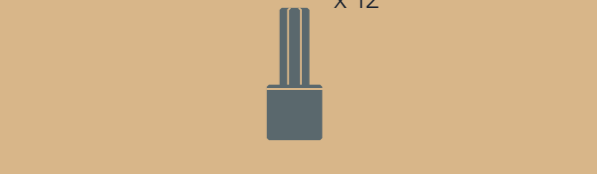
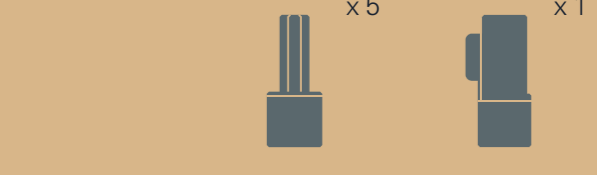
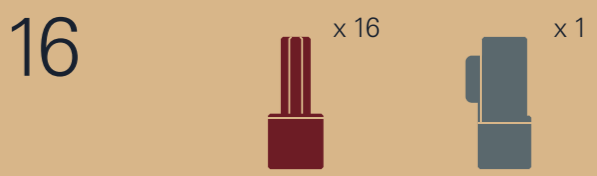
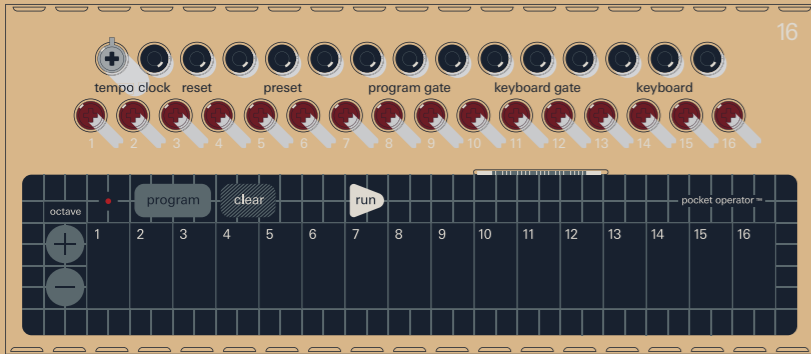
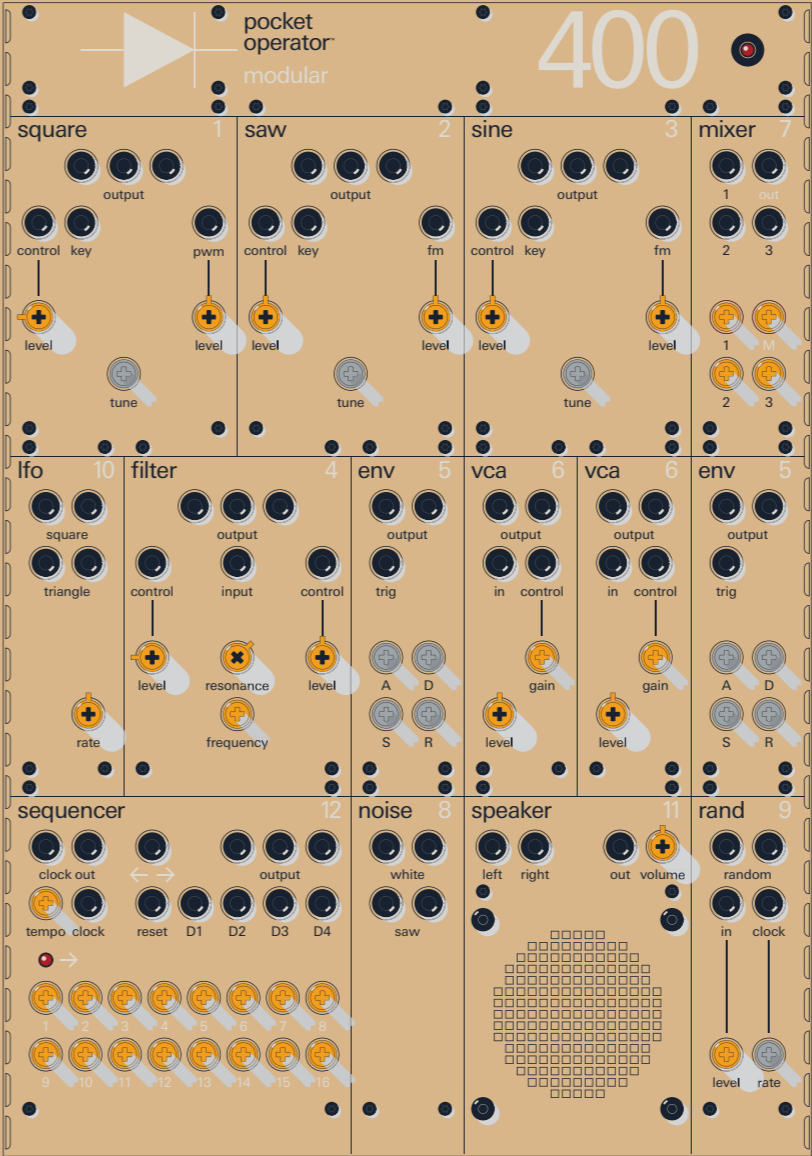
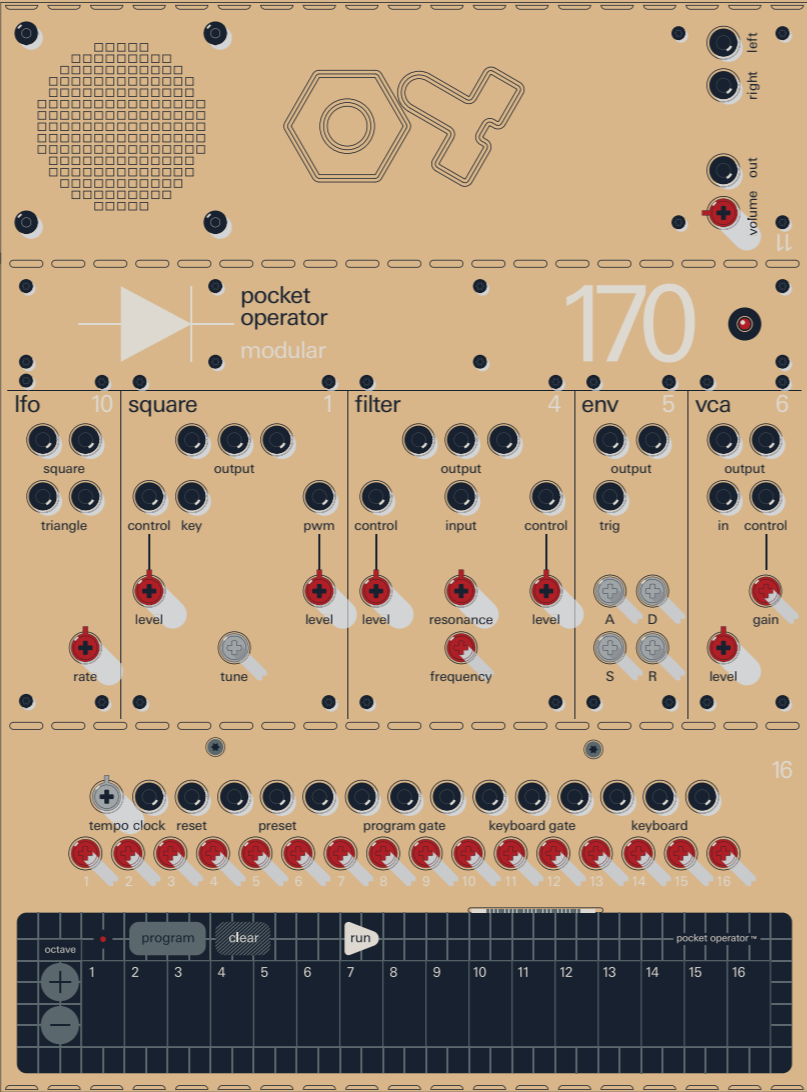
same principle
for 170 & 400



M ▶
module
assembly

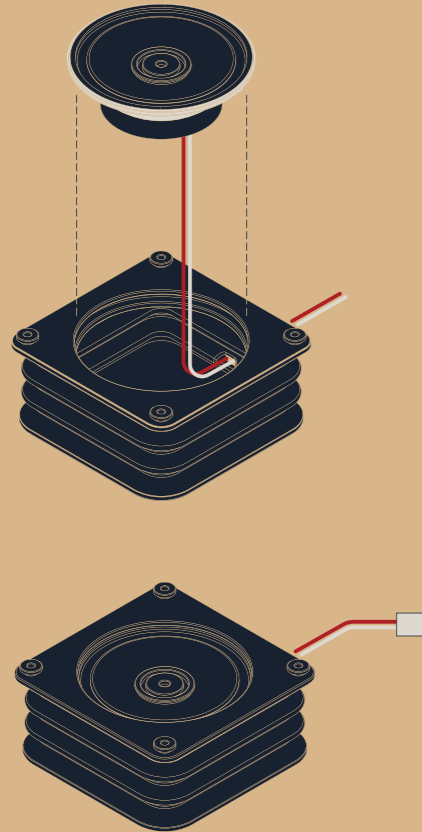


knob color layout

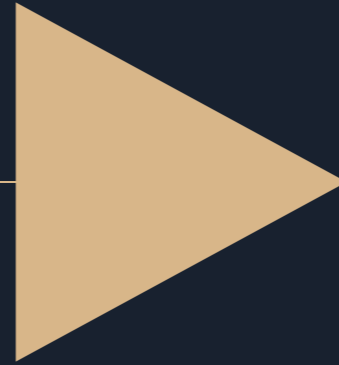
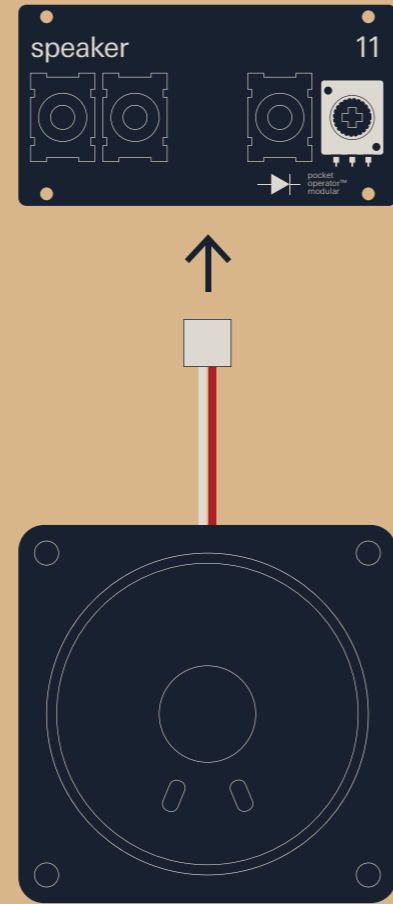


speaker
assembly

1

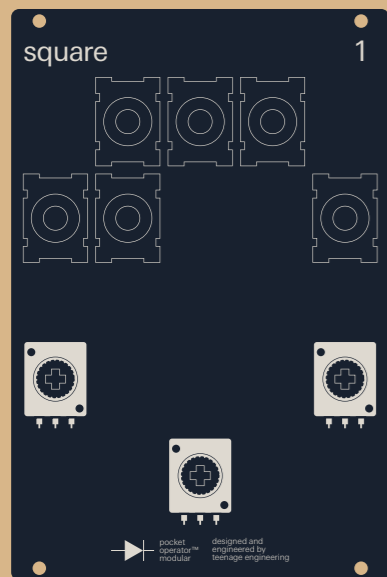


2





1

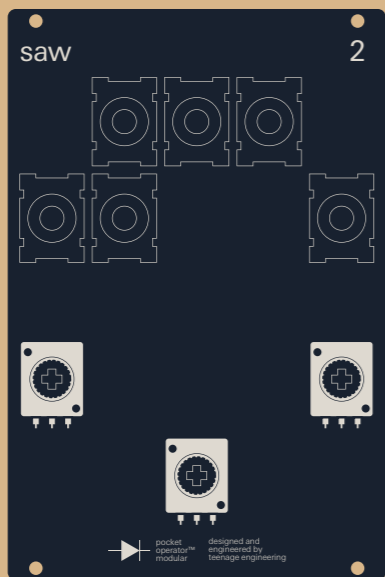


square

square oscillator

rich in odd harmonics, the square wave oscillator is great for hollow basses and screaming leads. the pulse width modulation (pwm) input makes it possible to generate a faux two oscillator detune sound.

2

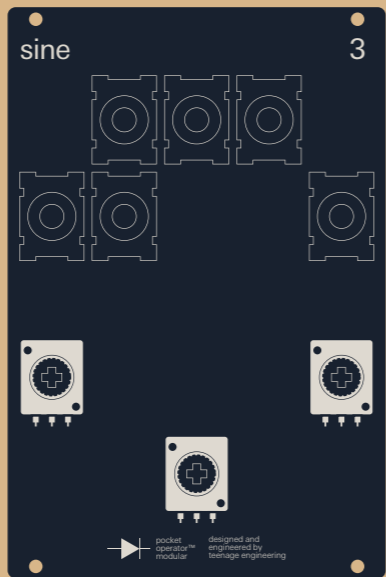


saw

sawtooth oscillator

containing both the odd and even harmonics, the sawtooth is great for string types of sound. the linear frequency modulation input (fm) easily brings you into the sci-fi domain.

3

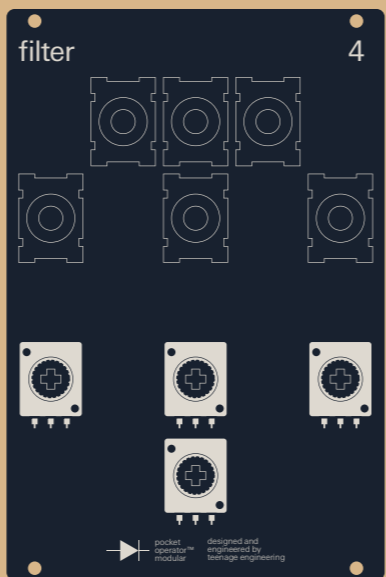


sine

sine oscillator

with no overtones the pure sine wave is a jack of all trades. from pure bass to dub sirens, it's the army knife of a modular system. the linear frequency modulation input (fm) easily brings you into the sci-fi domain.

4

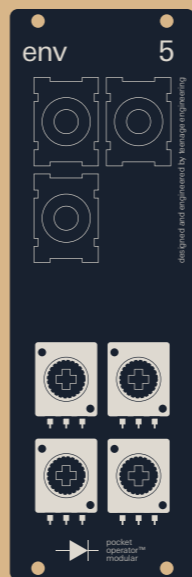


filter

low pass filter

shape your sound with the 24db/oct low pass filter. get lost in space while tweaking the resonance and frequency pots..

5

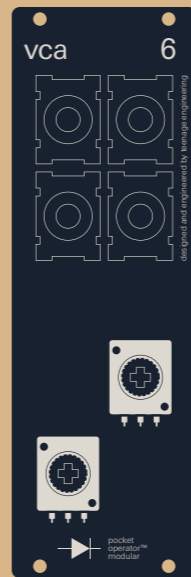


env

envelope

a classic. attack, decay, sustain and release. give your sonic creation the contour it deserves. triggered by any signal that crosses the two volt threshold.

6

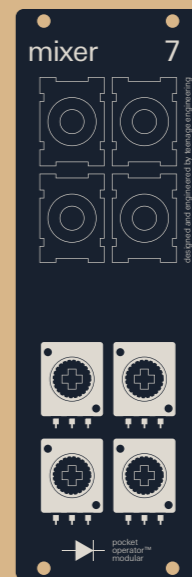


vca

voltage control amplifier

automate your volume! feed it control voltage and your signal will adapt accordingly. best friends with the envelope for classic configurations, and your oscillator in wired configurations.

7



mixer

3-channel mixer

a necessity in all modular systems. three inputs, one output with volume control over both the individual inputs as well as the master output.

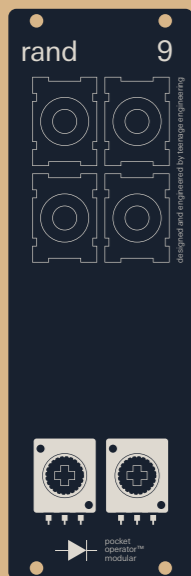
8



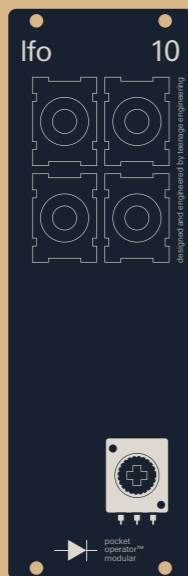
noise

2 x noise

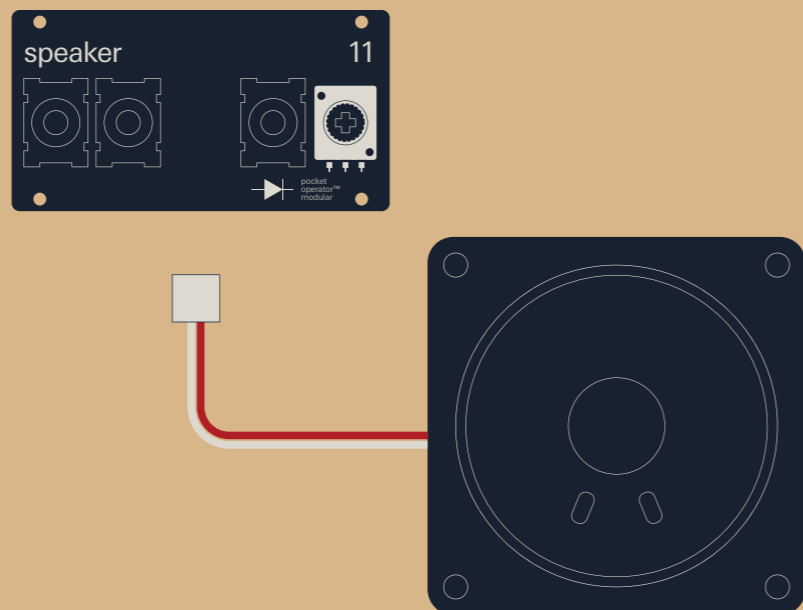
the white noise contains noise equal over the whole spectrum. the saw output is a perfect companion to the sample and hold.

M**9****rand**

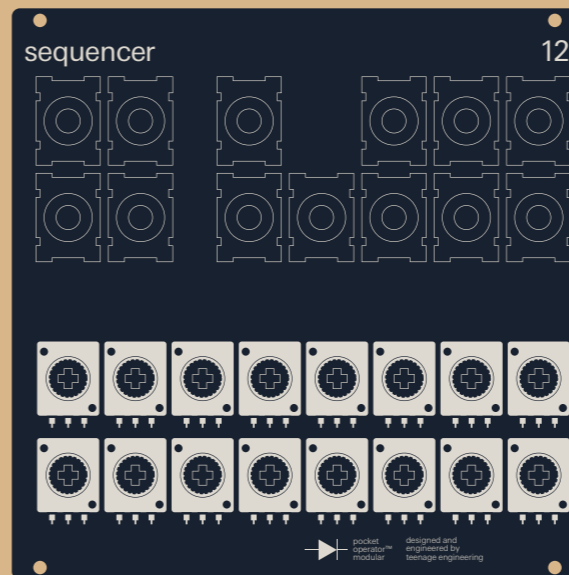
randomise your music with the sample and hold. any input is sampled and then presented at the outputs. rate can be controlled both externally and internally, but always needs an external signal to sample. experiment with both receptive and random sources as the sample input.

10**lfo**

low frequency oscillator generating both square as well as triangle waves, the low frequency oscillator is the perfect tool to spice up your patches. great in everything from automated filter sweeps to syncing the clocks.

11**speaker**

amplifier + speaker bellow cables goes in, sounds come out. show off your amazing patch to the rest of the world. let them hear it.

12**sequencer**

16-step sequencer sixteen steps of control, override the internal clock with the clock input. make it go backwards with the arrow input. jump to the first step, the second, fourth or eighth step with the reset and binary inputs. or just reset it to the first step by setting the stage pot to max.

13**mystery module**

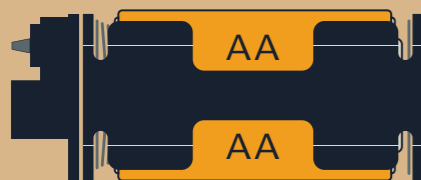
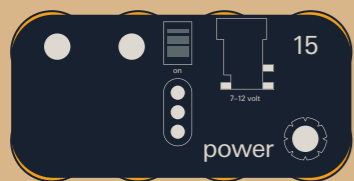
number 13 won ton 'animal' chin entered the modular scene with this unit back in the late 80s during a skate /modular retreat. the rumor says that this module will never be for sale, just given away at special outdoor gatherings.

14**power distro**

20 unit power hub the central nervous system and the connection hub for all the power. bend the led 180° and fit it through the hole to get front panel light action

M

15

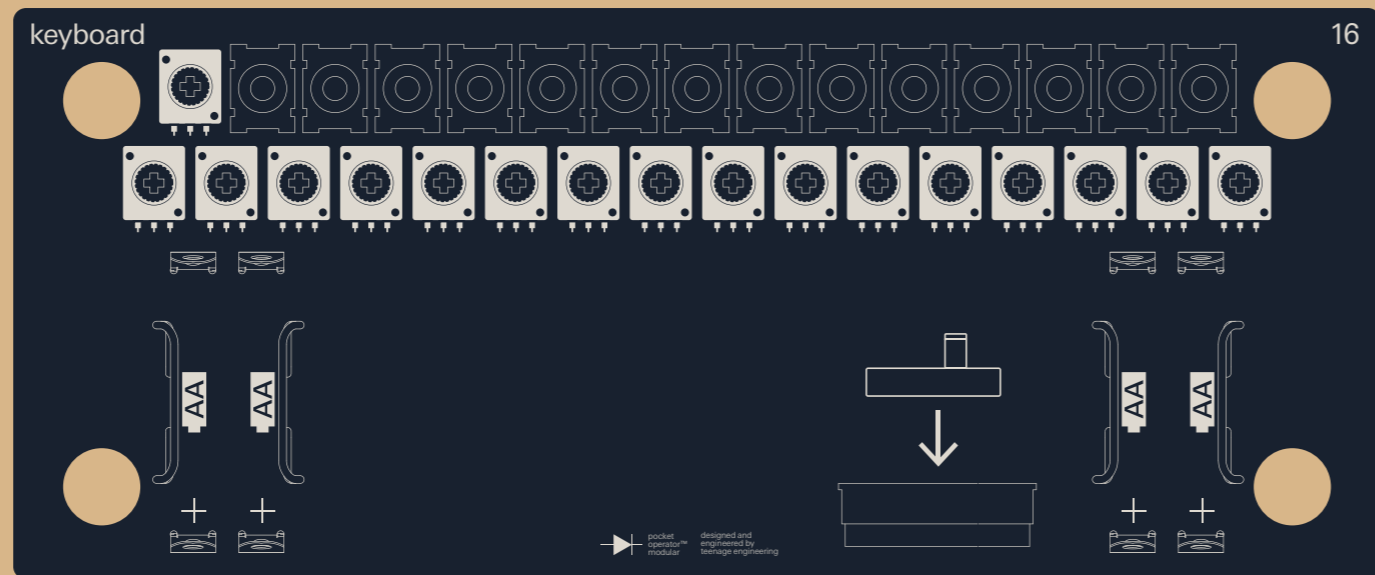


psu

power pack

small, portable, battery powered. delivers plus and minus twelve volts to support your favorite system.

16



keyboard

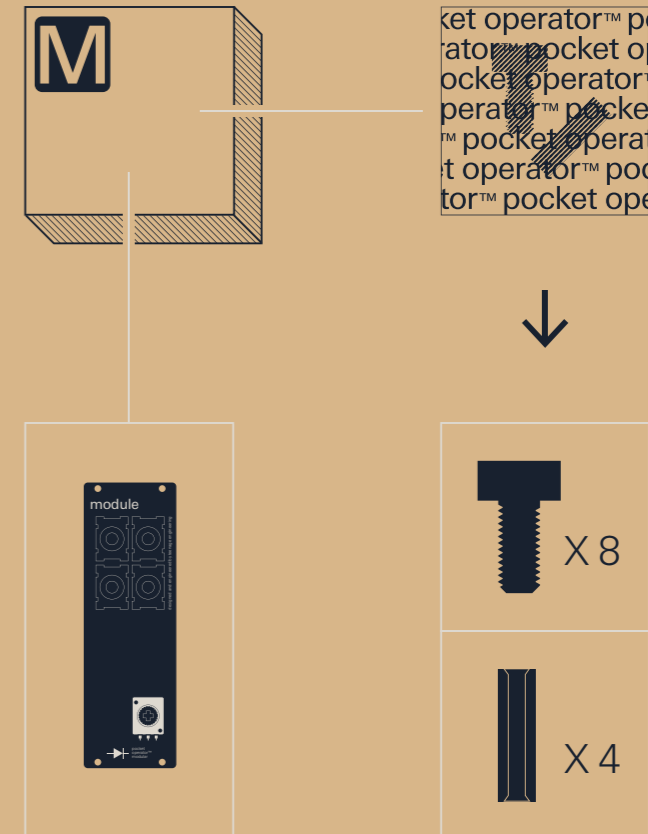
16-note membrane keyboard

the perfect interface to control your 170 and 400 systems! each key is available as both a chromatic and a preset output. play the keyboard like a virtuoso or program a sequence of arbitrary voltages and gates to

manipulate your patches. the possibilities are endless. the internal clock can be overridden with an external clock input. program gate will output any incoming clock signal and the keyboard gate can be program-

med to rest on selected steps. press the [program] key and punch in your desired notes, press [program] again to stop the input. press [run] to start the sequence. note: if you're using an external clock make sure it's running too...

box content



keyboard

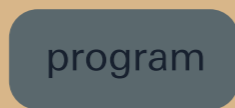
you can program the **16** to playback your recorded notes. this function is called a sequencer.

sie können die **16** programmieren, um ihre aufgenommenen noten abzuspielen. diese funktion wird sequencer genannt.

vous pouvez programmer le **16** pour lire vos notes enregistrées. cette fonction est appelée séquenceur.

è possibile programmare il **16** per riprodurre le note registrate. questa funzione è chiamata sequencer.

16をプログラムして、録音した音符を再生することができます。この機能はシーケンサーと呼ばれます。



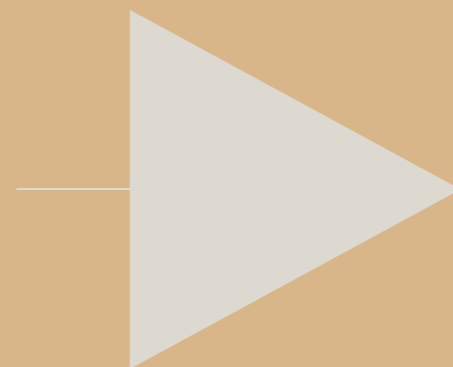
press **program** key to start writing notes into memory. red led indicates write mode



press **run** to start playback of the note program



press **clear** to erase memory and start over



patches



let's patch

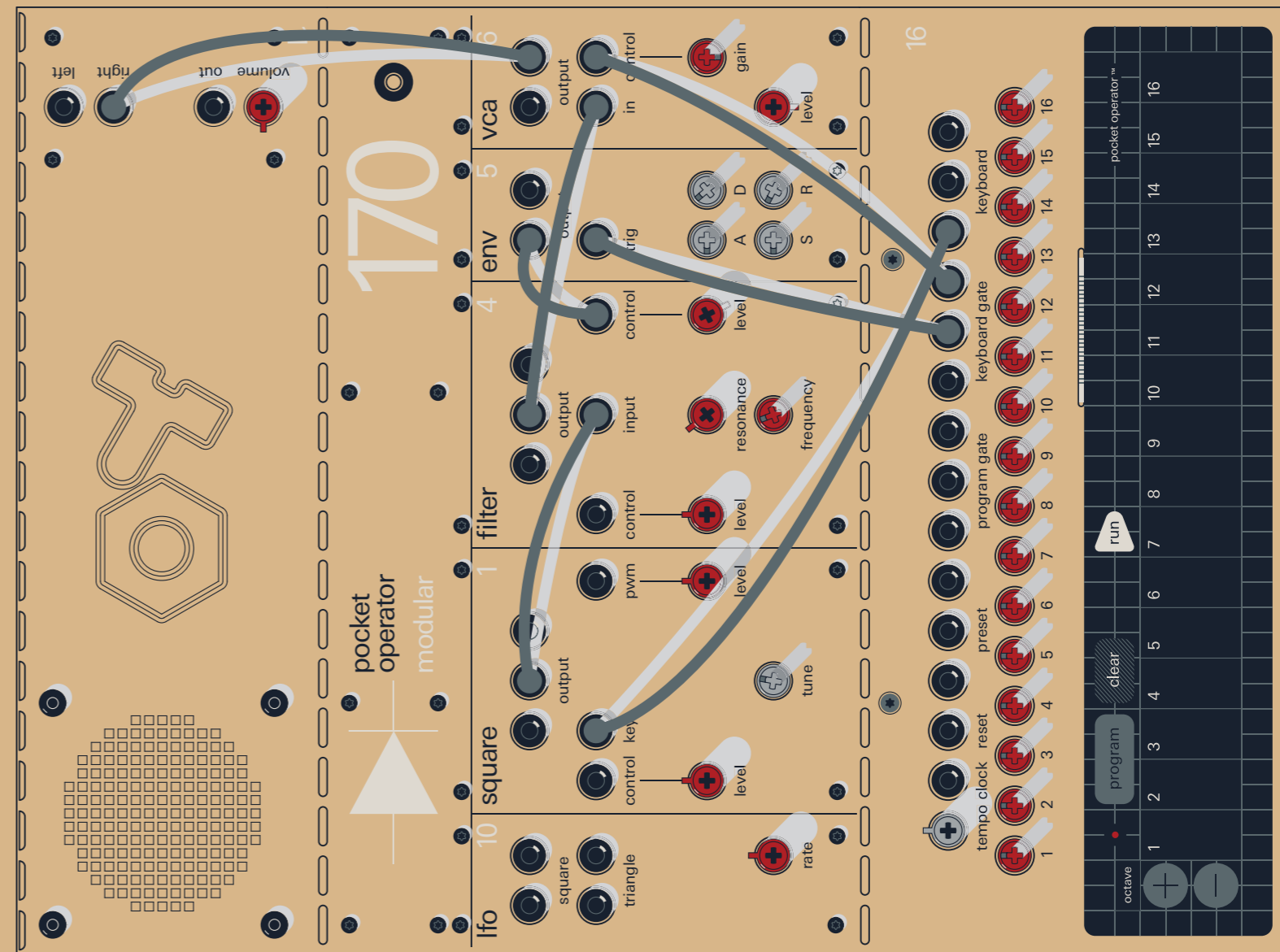
in a modular synthesizer, you can patch anything to anywhere. don't worry, nothing will break if you do it wrong. in fact, there is no wrong, but not everything you patch will be musically useful, that's up to you to decide. real-time hands-on experimentation is the greatest part about modulars. it will change your mind and your soul. here are some examples of patches to get you started.

in einem modularen synthesizer können sie alles an jeden ort patchen. mach dir keine sorgen, nichts wird brechen, wenn du es falsch machst. in der tat, es gibt kein falsches, aber nicht alles, was sie patchen, wird musikalisch nützlich sein, das liegt an ihnen zu entscheiden. echtzeit-experimentieren in echtzeit ist der grösste teil von modularen. es wird deine meinung und deine seele verändern. hier sind einige beispiele für patches, mit denen sie beginnen können.

dans un synthétiseur modulaire, vous pouvez patcher n'importe où n'importe où. ne vous inquiétez pas, rien ne se cassera si vous le faites mal. En fait, il n'y a pas de problème, mais tout ce que vous corrigez ne sera pas utile sur le plan musical, à vous de décider. l'expérimentation pratique en temps réel est la partie la plus importante des modules. cela changera votre esprit et votre âme. Voici quelques exemples de correctifs pour vous aider à démarrer.

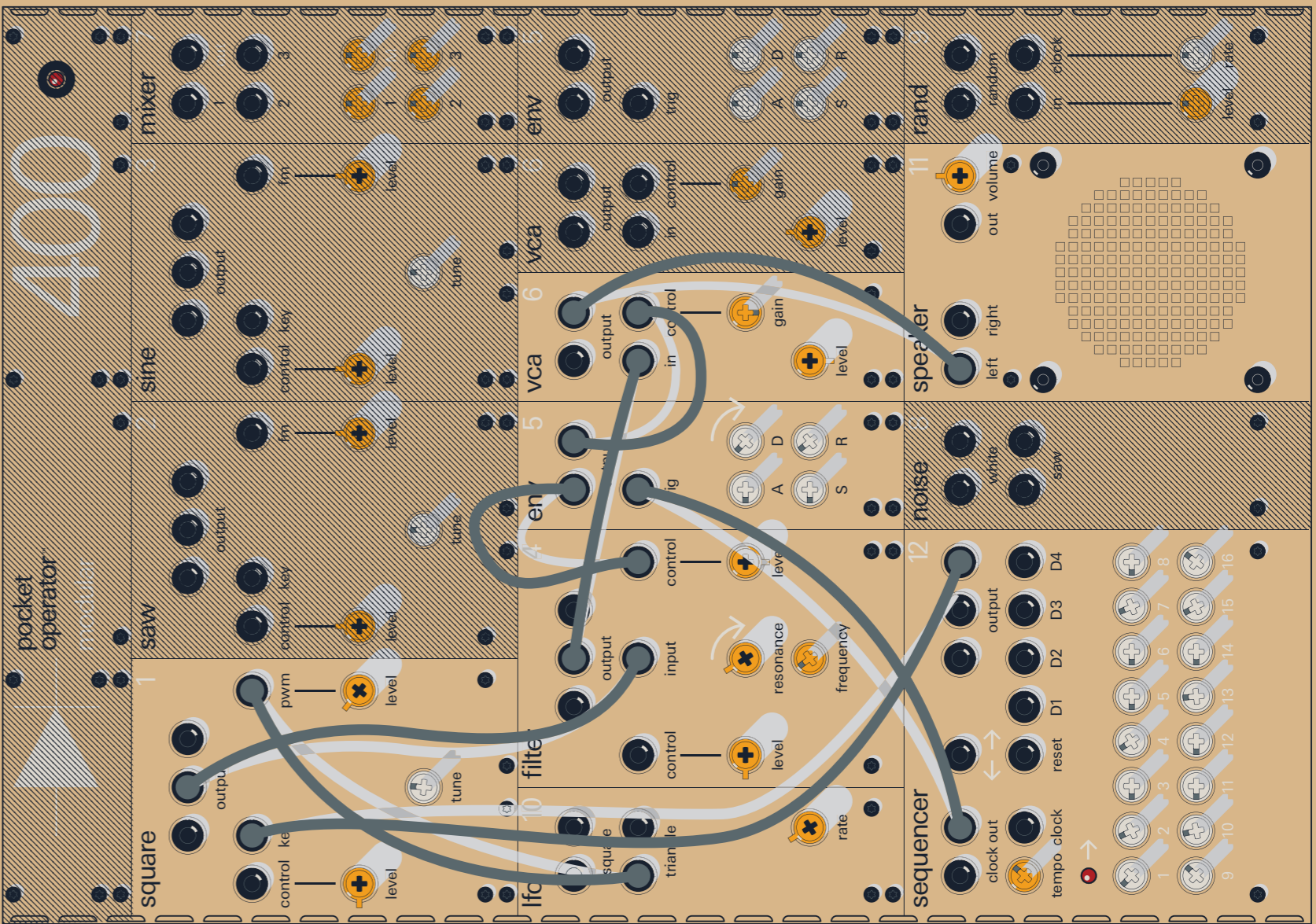
in un sintetizzatore modulare, puoi applicare qualsiasi patch ovunque. non preoccuparti, nulla si romperà se lo fai male. in effetti, non c'è nulla di sbagliato, ma non tutto ciò che patch è utile per la musica, dipende da te decidere. la sperimentazione pratica in tempo reale è la parte più importante delle modulars. cambierà la tua mente e la tua anima. Ecco alcuni esempi di patch per iniziare.

モジュラーシンセサイザーでは、どこにでも何かをパッチすることができます。心配しないでください。間違っても何も壊れません。実際には間違っているわけではありませんが、パッチのすべてが音楽的に役立つわけではありません。リアルタイムの実験的な実験はモジュラーについての最も重要な部分です。それはあなたの心とあなたの魂を変えます。ここにあなたを始められるパッチのいくつかの例があります。

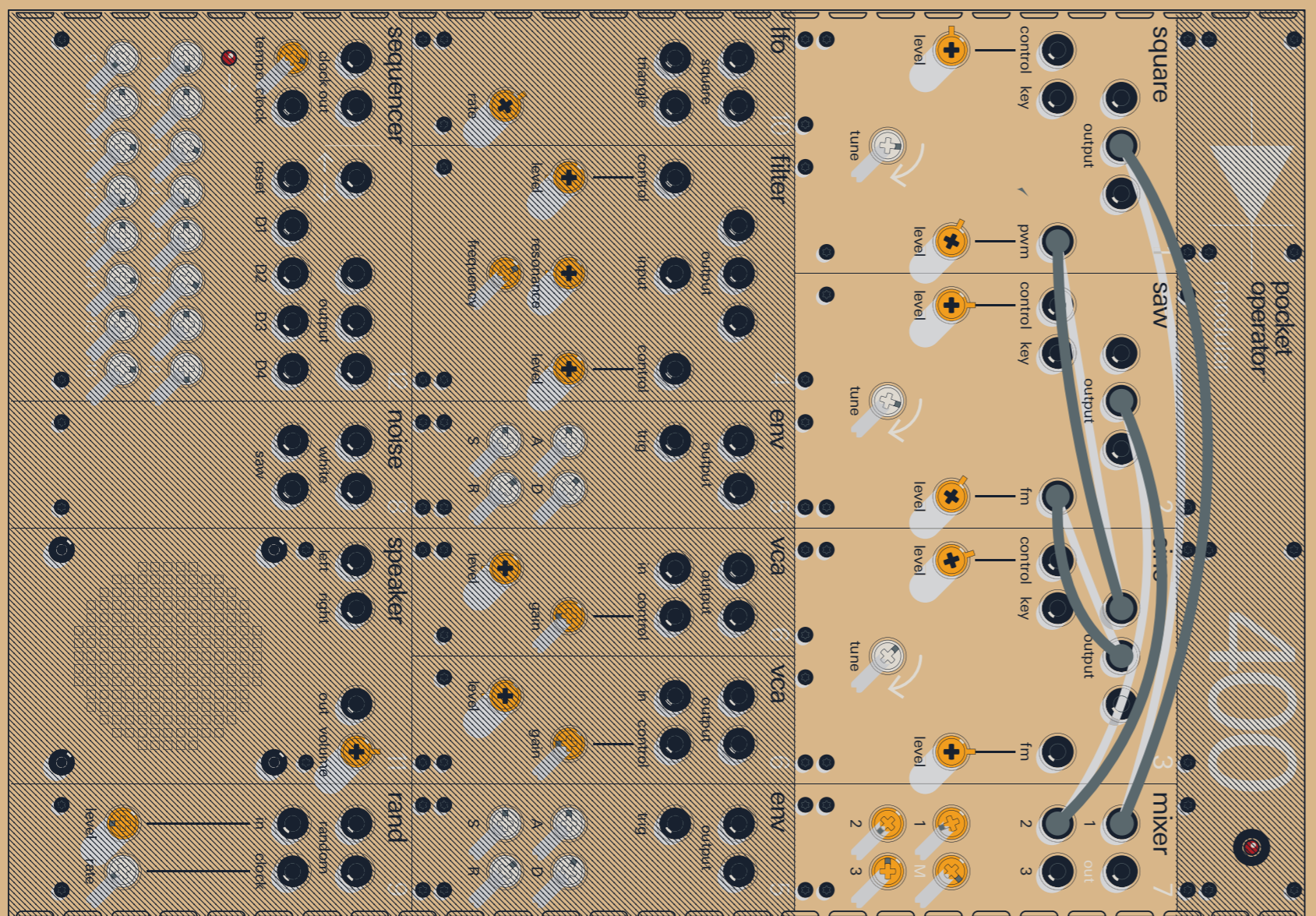


The 'girth' interface features a central modular synthesizer patch. At the top, there are two large hexagonal grid patterns. The main area contains several modules: a 'pocket operator modular' module with a white triangle, a 'filter' module with a frequency knob, an 'env' (envelope) module with a 'rate' knob, and a 'vca' (voltage-controlled amplifier) module. A 'square' wave generator is connected to the filter. The patch is interconnected with a keyboard controller at the bottom, which has 16 keys and various control knobs. A control panel on the left includes a 'program' button, a 'clear' button, a 'run' button, and an 'octave' selector with '+' and '-' buttons. The number '170' is displayed in the center of the patch.

The 'autoplay' interface features a modular synthesizer patch similar to 'girth'. It includes a 'pocket operator modular' module, a 'filter' module, an 'env' module, and a 'vca' module. A 'square' wave generator is connected to the filter. The patch is interconnected with a keyboard controller at the bottom, which has 16 keys and various control knobs. A control panel on the left includes a 'program' button, a 'clear' button, a 'run' button, and an 'octave' selector with '+' and '-' buttons. The number '170' is displayed in the center of the patch.

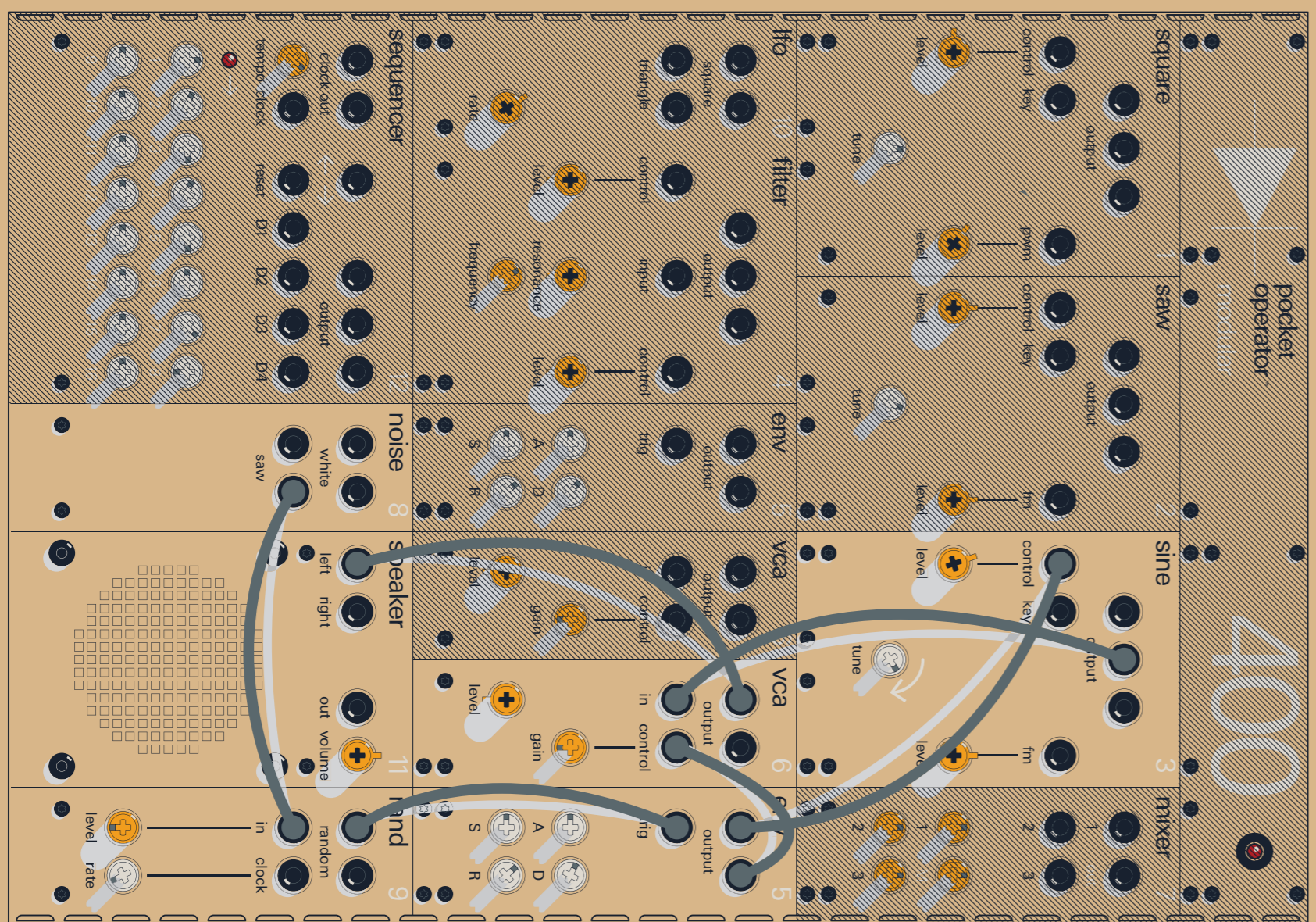
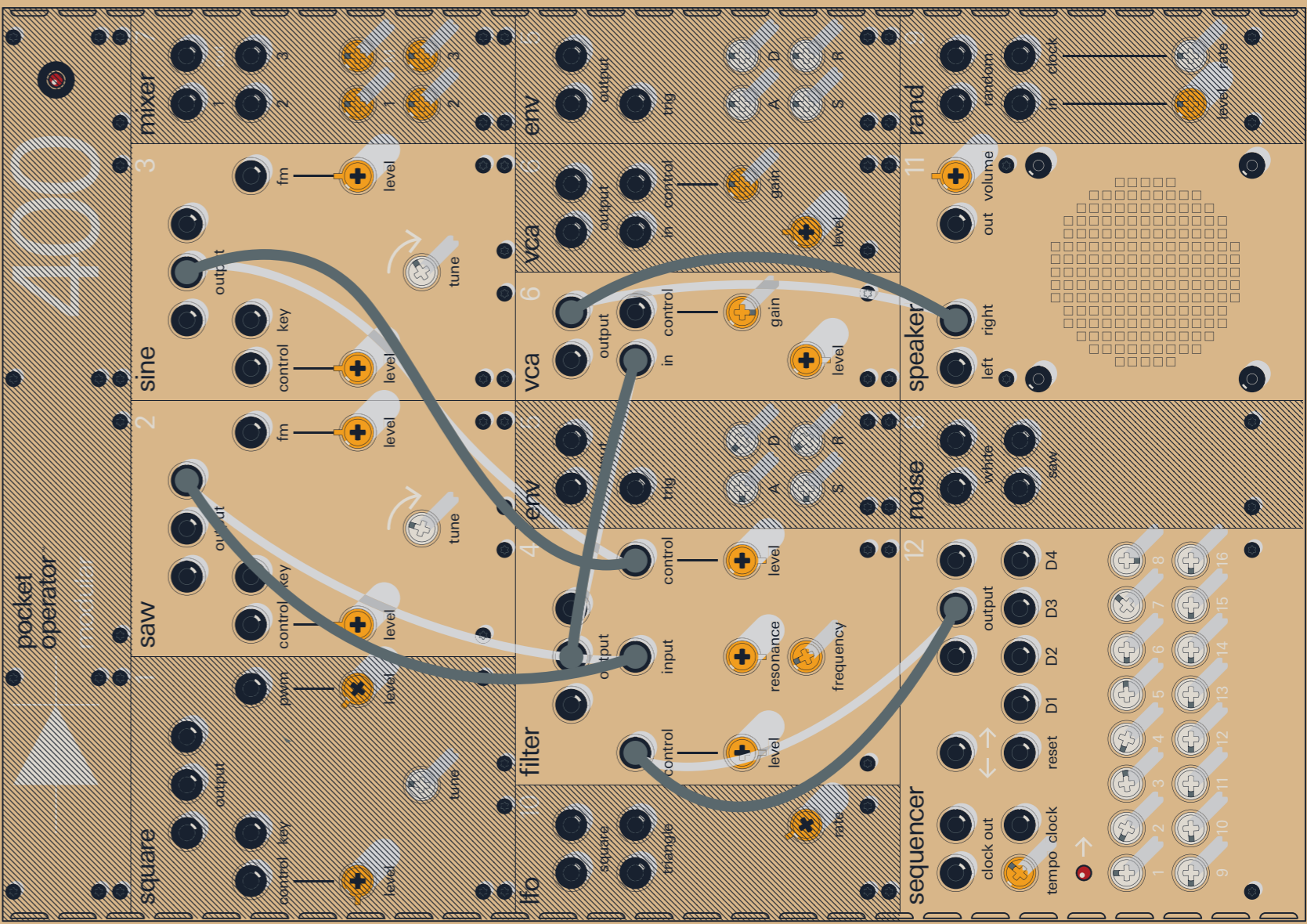


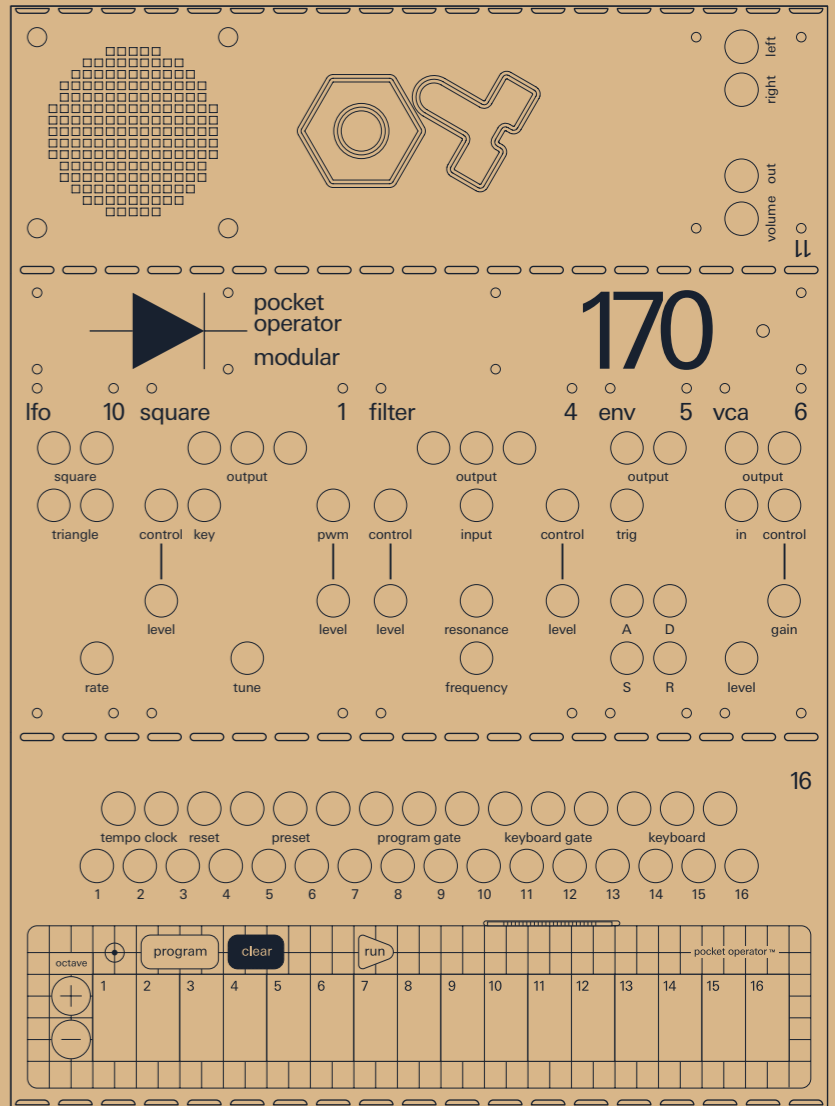
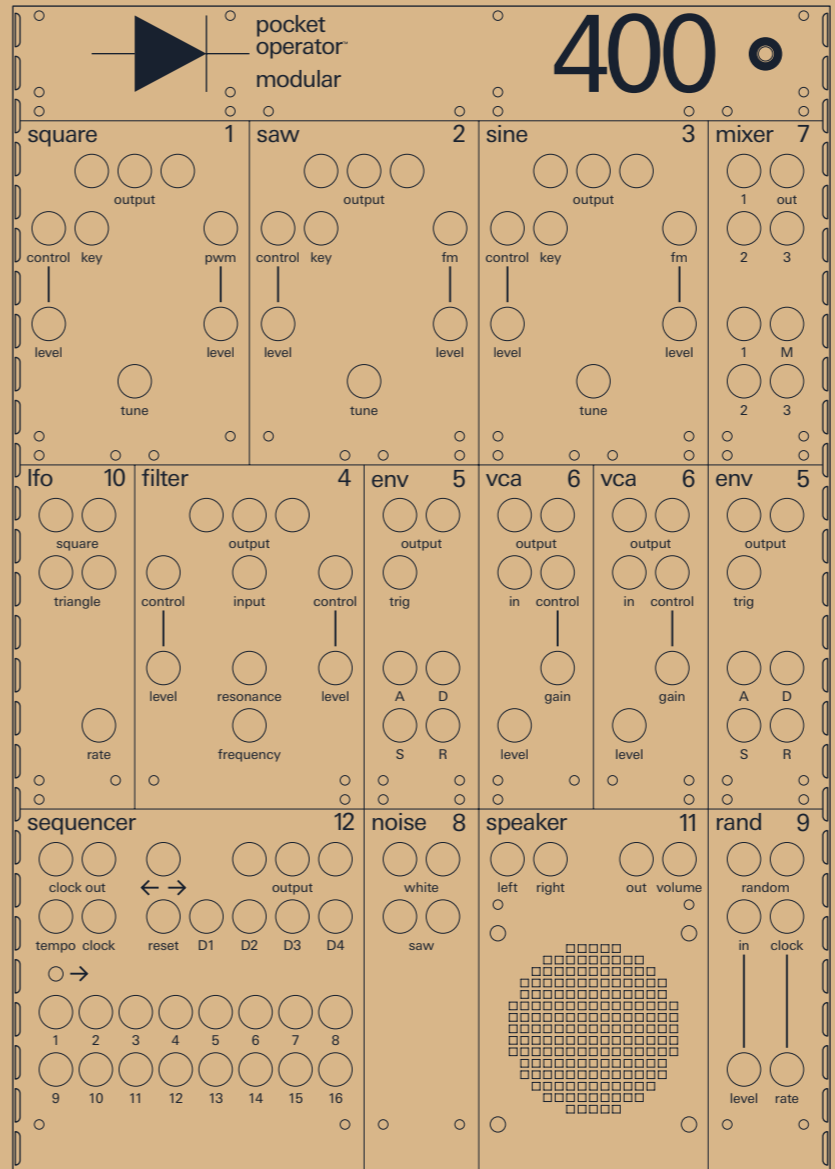
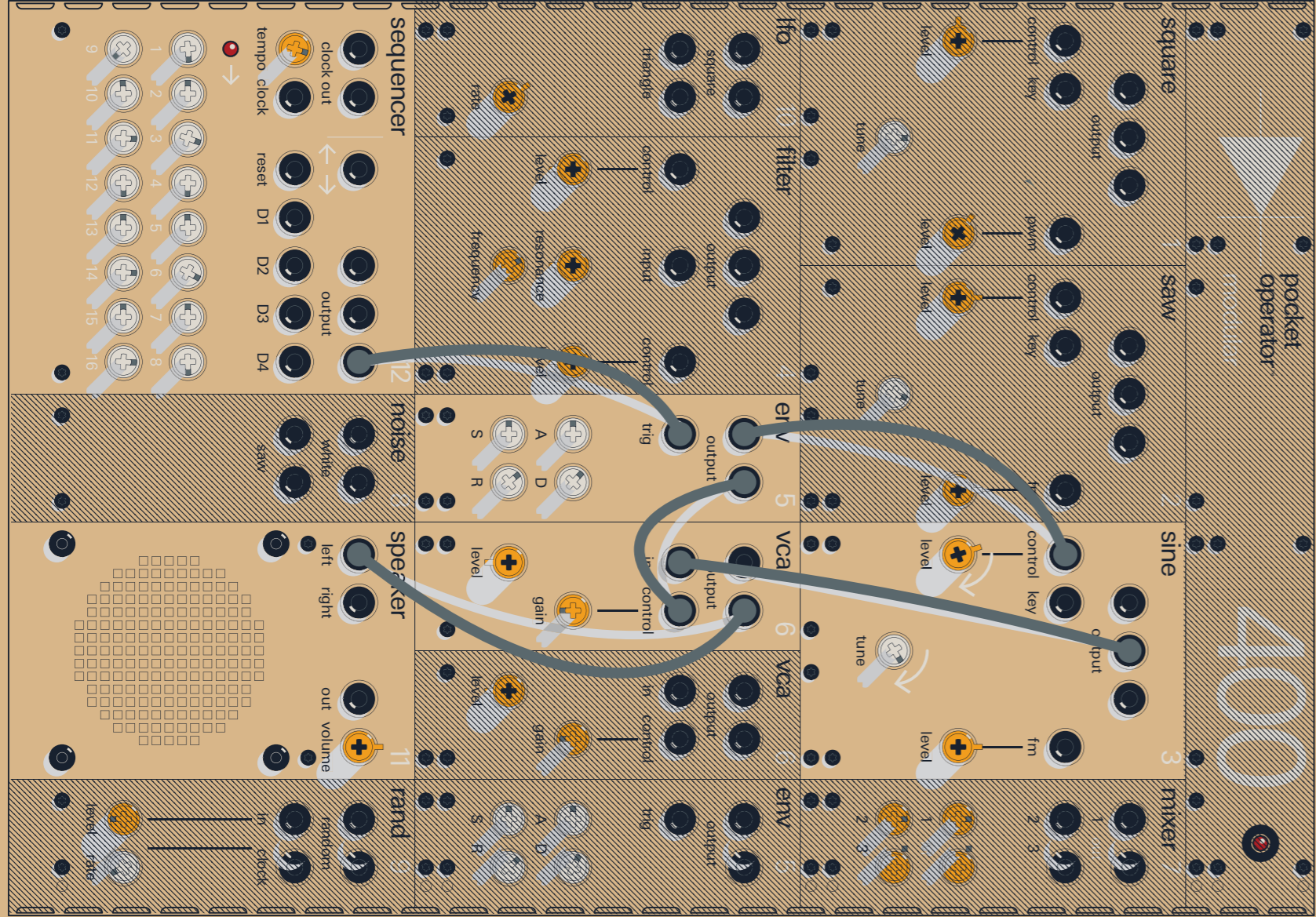
corpus sequentia



obese drone

patch note: start with square and saw oscillator tuned to the same frequency



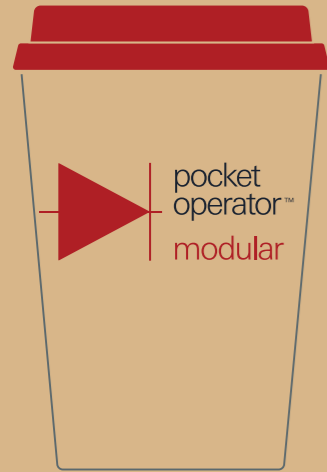


copy page and your own patches.

add-on's

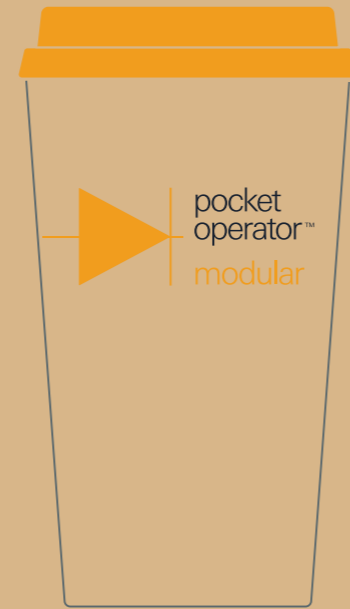
cable cup
'gulp'

L 15 cm
3.5 mm jack

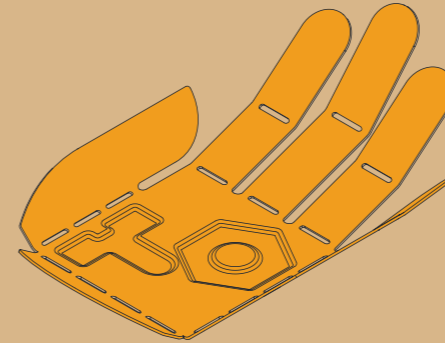


cable cup
'big gulp'

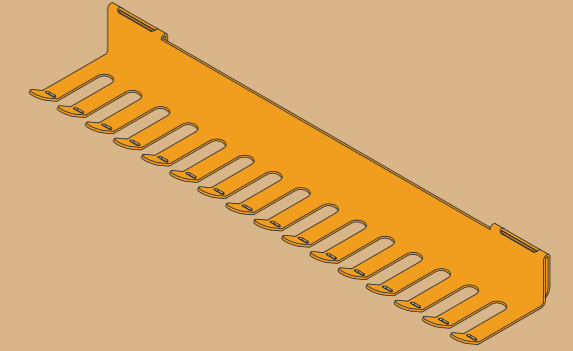
L 30 cm
3.5 mm jack



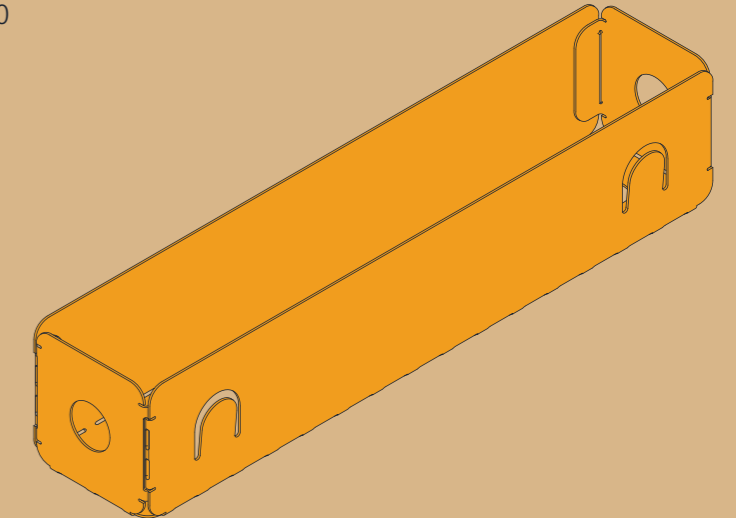
foldable hand
promo



cable fork
for 400

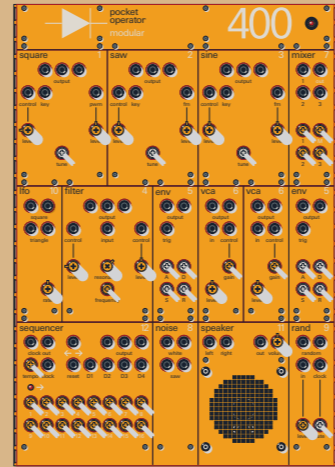
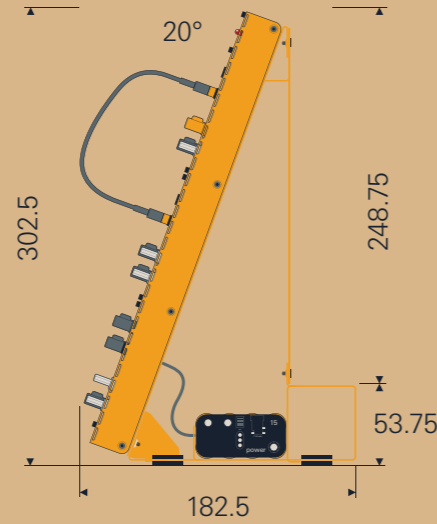
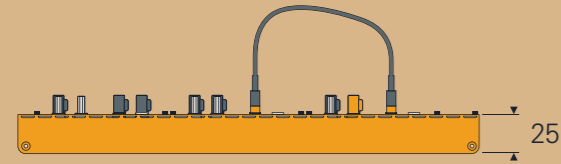


cable drawer
for 400



measurements

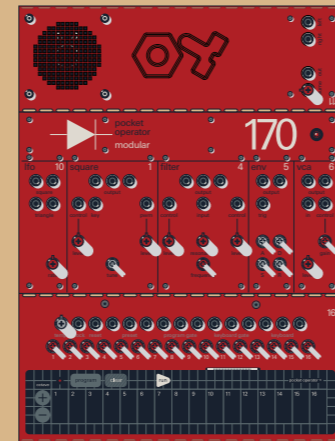
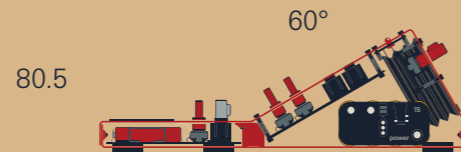
400



16



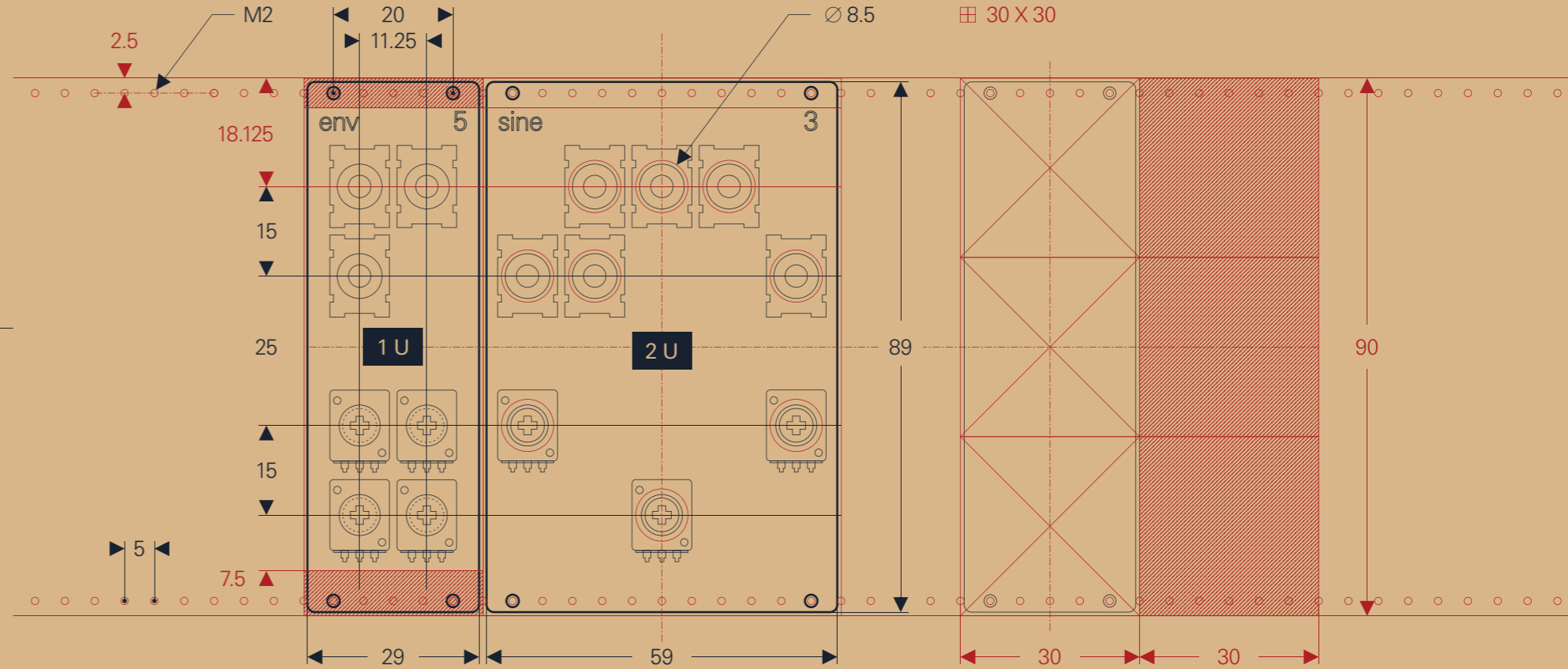
170



SCALE 1:5

all dimensions in mm

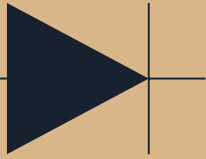
system dimensions



SCALE 1:1

all dimensions in mm

grid actual



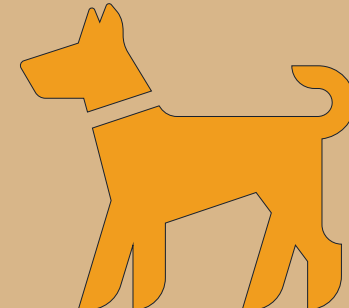
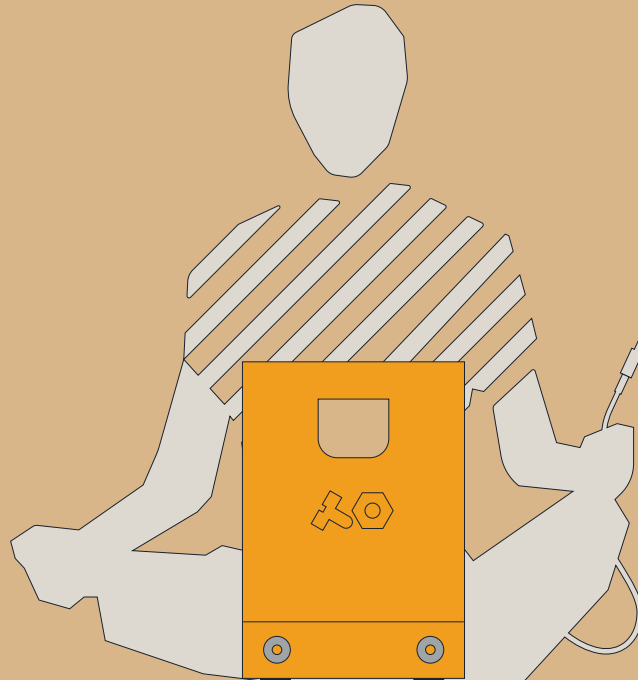
pocket operator™ goes modular!

create natural analog sound with this latest addition to the popular pocket operator™ series. explore a complete modular system with preconfigured

chassis for a smooth modular experience. upgrade to the open frame chassis when you are ready to expand your sonic universe beyond all limits.



an inner sonic journey designed and engineered by teenage engineering



1-15

POCKET OPERATOR™ MODULAR SERIES 1

SQUARE OSCILLATOR, SAW OSCILLATOR, SINE OSCILLATOR, LOW PASS FILTER, NOISE, SAMPLE & HOLD, MIXER, VCA, LFO, SPEAKER & AMPLIFIER MODULE, SEQUENCER, ENVELOPE, POWER DISTRO & POWER PAC

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16

SHEET METAL CHASSIS MEMBRANE KEYBOARD

16 IS A MEMBRANE KEYBOARD WITH BUILT-IN PROGRAMMABLE SEQUENCER

1 MODULE

4 X AAA BATTERY POWERED

170

PRE-CONFIGURED 1-ROW CHASSIS WITH BUILT-IN KEYBOARD

170 IS A MONOPHONIC ANALOG SYNTHESIZER WITH BUILT-IN KEYBOARD AND PROGRAMMABLE SEQUENCER

7 MODULES

4 X AAA (KEYBOARD)
8 X AA (12V POWER PACK)

400

PRE-CONFIGURED 3-ROW CHASSIS WITH CARRYING HANDLE

400 IS A COMPETENT MODULAR SYNTHESIZER WITH WARM NATURAL ANALOG SOUND. INCLUDES A 16-STEP SEQUENCER AND THREE OSCILLATORS

14 MODULES

8 X AA (12V POWER PACK)

770-0005