The Home
HANDYMAN

July/August 2023 • Vol 33 No 07

SA'S ORIGINAL DIY MAGAZINE

MAKE A KNIFE BLOCK

CREATE A CONCRETE COFFEE TABLE

Tiling trends

- Choose the best tile for your project
- Tile an outdoor shower

+plus

- Make a kitchen cabinet
- Shining a light on installing solar
- How to install a toilet
- Grinders: The guide from every angle
- Make a drill press vice without welding

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The renewable energy conundrum

I recently attended The Solar & Future Energy Show Africa 2023 at the Sandton Convention Centre, along with about 13 000 other people. If that is not a reaction to the ongoing spate of loadshedding, then I don't know what is!

The expo floor was full of hundreds of alternative energy solutions and there were hours of free content to enjoy where visitors could hear from expert speakers as they discussed everything energy related. There was a lot to learn… One of the biggest questions was whether to go solar, or buy a generator.

Keeping the lights on during loadshedding can be a costly exercise. Absa estimates that a household that spends R2 500 a month on electricity would need to spend about R190 000 to go completely off-grid with a solar system.

In comparison, a high-end diesel-powered generator capable of running most basic household appliances during bouts of loadshedding (between 7 and 12kVA) will set you back around R30 000. But generators come with many extra costs, not least of which is the price of diesel.

Running at full power, a 10kVA generator uses around 1.5 litres of diesel per hour. With diesel costing around R20/litre (and going up most months), running this generator for just five hours every day means you'll need to budget for R1 000 worth of diesel every month – and you'll also still need to pay for the electricity you use when there isn't loadshedding.

Then there's the environmental cost. Carbon dioxide (CO_2) emissions are the main driver of global climate change, and diesel – both its production and its usage – is one of the highest contributors to global CO_2 emissions.

Add in the fact that, at some point, an off-grid solar installation will begin to 'pay for itself' when your saving on the power bill overtakes your monthly repayment for the installation, and solar power suddenly sounds a lot more cost-friendly.

As an incentive to start looking at loadshedding sunny side up, banks are making solar power more accessible by offering tailored loans, and partnering with reputable providers and installers. There are also numerous affordable rent-to-own solar options on the market, with monthly rental costs that depend on the system size and contract duration.

One of the biggest talking points, however, was regarding buying from, and having installations done, by fly-by-night companies. As with any industry which mushrooms very quickly, the solar industry is seen by many as a way to grab a quick buck, so they enter the market without the relevant knowledge, experience, or qualifications. It is imperative that you use a trustworthy company with a strong track record, and contactable references.

The publisher of *The Home Handyman* recently sent me a WhatsApp detailing a home where the roof collapsed because of the solar panels. 16 panels were installed on the roof, and because of the weight, the wooden roof trusses collapsed! So, if you are having solar installed on your roof, it is recommended that you consult a structural engineer.

These are interesting times, so please be aware of scammers in the renewable energy game trying to make some money from you.

Gregg

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www.homehandyman.co.za

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The Home Handyman magazine is a specialized D.I.Y. publication and caters for a well-defined niche market since November 1993. The magazine equips its ever-growing readership with relevant D.I.Y. information, knowledge and skills.

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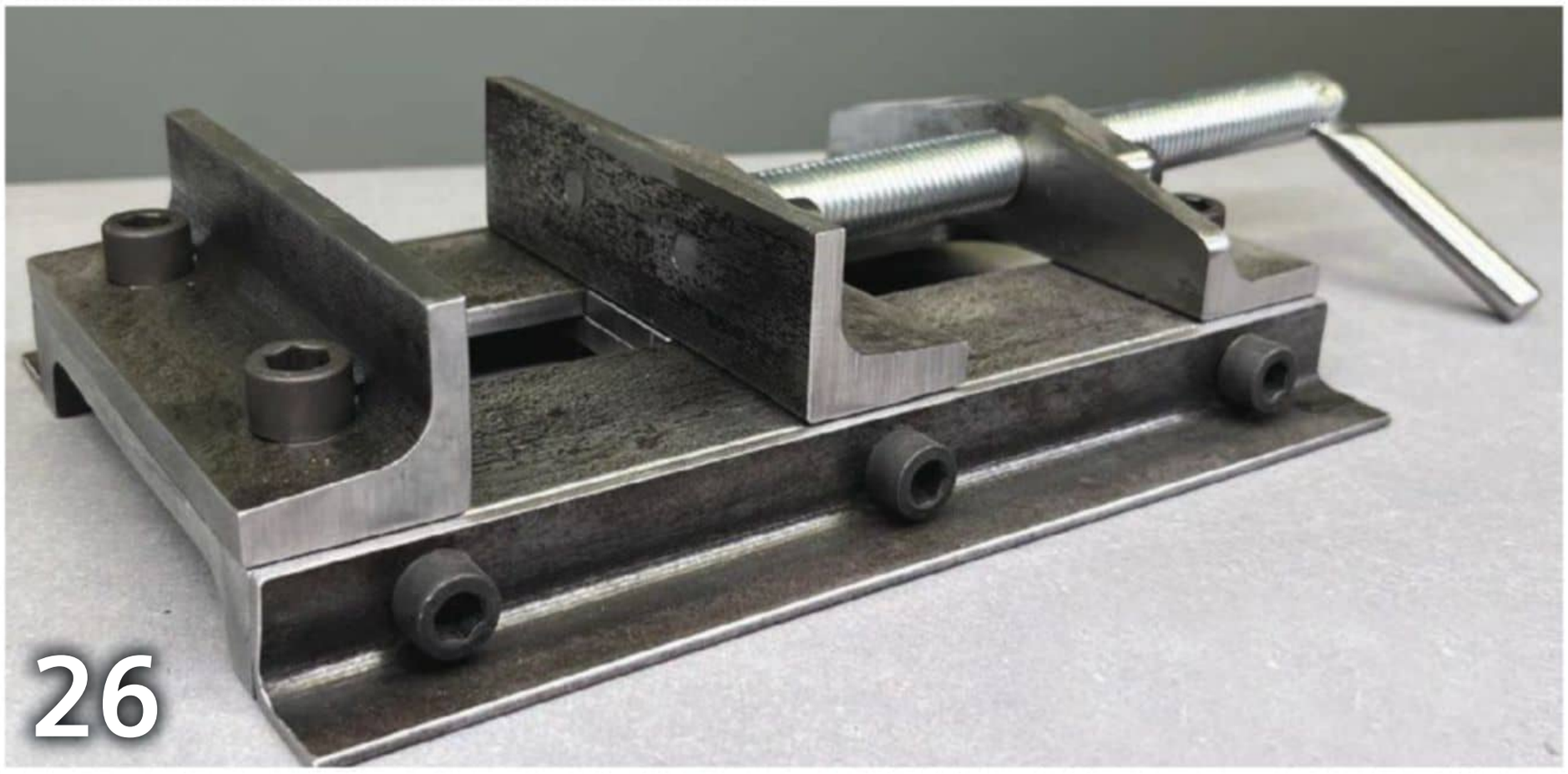

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OFF THE SHELF

Your guide to the latest products in the world of DIY

Make measuring simple

The Zamo from Bosch is a handy adaptable laser measure set with three useful attachments

Zamo Set makes measuring objects and interior spaces accurate, fast and simple. The handy set is ideal for precise measuring with ease. Laser technology achieves high levels of accuracy for distances up to 20m. The Zamo Set integrates three practical, Bosch patented adapters for a wide range of projects: A wheel adapter easily measures curves and irregular surfaces, while the line adapter is perfect for levelling objects. Also included is a tape adapter that precisely metres circumferences and freestanding objects. For easy handling, the tool can be intuitively operated by its one-button control, comfortably measuring distances, objects and shapes.

Functions and advantages of Zamo Set:

Calculate areas with ease: The Square-Metre Function calculates areas with a simple double-click by multiplying the last two measured values. This is perfect for quickly and easily determining flooring or wallpaper requirements.

Measures curves and uneven surfaces: The Wheel Adapter provides fast and easy measurements of freestanding objects as well as curved or irregular surfaces. It is particularly useful for determining upholstery fabric lengths or cable lengths for home electronics and entertainment systems.

Easy horizontal and vertical levelling: Line Adapter projects a laser line for fast and easy horizontal and vertical alignment of objects

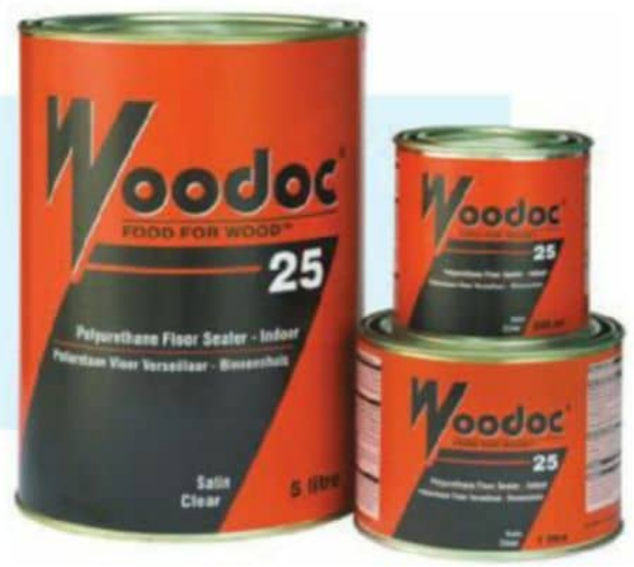
Adapting to every need: The interface enables the mounting of Bosch's three adapter heads (the Wheel Adapter, the Line Adapter, and the Tape Adapter) that suit every type of measuring need.

Laser precision for determining distances quickly: Measure distances with precision – get accurate results when determining heights and lengths thanks to Bosch's laser technology.

For more information, visit www.bosch-diy.com/za

Wooden floor sealer

A deep polished look for beautiful floors, Woodoc 25 deep penetrates the wood, nourishing it and enhancing the colour and grain with a warm glow



Woodoc 25 is a high solids, clear high-performance polyurethane floor sealer suitable for application to all indoor wooden floors and stairs. Woodoc 25 is clear and comes in satin and matt finishes. Floors finished with Woodoc 25 are:

- Water resistant
- Alcohol resistant
- Scratch resistant
- Heat resistant to 180° C
- Toy safe (EN71-3 (2013))

As a solvent-based product W25 brings out the rich tones of the wood for a classic look and feel. Ideal for restoring wooden floors in historic and Victorian houses and properties. It is extremely durable and will give years and years of trouble-free use even in high-traffic commercial settings.

For more information, visit www.woodoc.com

New and unique clamping sawhorses

WORX adds huge new feature to its sawhorses – inclusive of its 3-year warranty

The WORX Clamping Sawhorses with Bar Clamps WX065 now come with integrated bar clamps to fasten big or small projects securely in both vertical and horizontal positions. Weighing in at only 3.6kg each, you can toss them into the back of a vehicle or store them in the corner in-between projects.

"This now adds value to the popular WORX Sawhorses as they come complete ready to do the job, making the work quick and easy on site or in the workshop," says Dean Lotter, MD of the official WORX agents Brandroid.

On the bottom of these sawhorses, WORX made a place to hold a power strip or supplies to give your workspace an extra shelf or more storage. Engineered with innovative cutting-edge technology, and above modern efficiency standards, so you can build a cost-effective tool collection that has been designed to last. The clamps provide up to 136kg of clamping force allowing you to hold heavy projects securely in place for as long as you need.

For more information, visit www.worxSA.co.za

VOICE YOUR VIEWS

Do you have any thoughts or comments on DIY issues?

Share your opinion

The Home HANDYMAN

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Sheradona Devi

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Prizes are not exchangeable

The million volt question

Thank you for taking the time out of your heavy work schedule to answer this question/dilemma.

As an avid DIY'er, I often come across the same question posed to me by my friends from the Free State... how to avoid getting their tech fried by lightning storms, even after installing surge protection.

I researched a couple of solutions and realised that one solution is to ensure that there's a lightning conductor near to the satellite dish and that a coaxial surge lightning protector is installed, as well as having the costly affair of installing whole house surge protection that can handle a surge of 40 000 amps and more... but my question to you is: do these options exist in this country, aside from the usual red surge protection plugs?

Why I ask, is because I'm aware of the high voltage that courses through the electricals during a lightning strike, causing the electricity to arc and jump from one point to another, despite there being surge protection.

Thanks for listening, hope you have some local solution for all of us DIY enthusiasts

Sheradona Devi (Bob the Builder)

Richard Evert, National Director, Earthing and Lightning Protection Association replies: *The threat from lightning to electronic equipment is (a) lightning current and/or (b) rising voltage from lightning current.*

Let's dispense with the myths: Surge protection in household installations does not withstand lightning current.

Low voltage surge arresters or system of surge arresters will not withstand or transfer lightning current of 40 000 amps.

Part (a) of lightning protection is to avoid a direct lightning strike to your building. If needed, then create an alternate and separate path of continuous solid conductors to ground (without surge arresters) for the lightning current.

Part (b) is surge protection. Control any possible rising voltages (over voltages) on the electrical systems. Equipotential bonding and correctly selected and positioned surge protection prevents voltages from exceeding what your tech equipment can handle. No over voltage = no fried tech equipment.

Why does tech equipment with surge protection still regularly get fried? Equipotential bonding failed. The voltage exceeded maximum voltage tech can handle. Either bonding failed or surge protection was incorrect or in the wrong part of the electrical circuit. These failures are not better when the purchase price is more expensive. Do not use price as a consideration when choosing.

South Africa adopts international standards available to the consumer. Not all solutions are expensive. Some cheap solutions can be expensive. As consumer, choose wisely.

Custom designed chaise lounge

I wanted to share a prototype of a custom designed chaise lounge. The frames are made of laminated mahogany. The seating surface is open-weave webbed material with grommets along the edges, through which is laced to the side rails. It was made to order by a company that supplies 'trampolines' for catamarans, so it should be plenty strong, and it's made for the outdoors. Very comfortable! The next one will have arms as well.

Jim Sheen

Ed replies: *Great work Jim; please share the second prototype when it is complete.*

Teaching woodworking

I am an experimental psychologist who specialised in the development of learning and memory early in my career. However, I also loved doing woodworking. A way I got my children involved in the creative process of building was to begin with them making boats for their bathtubs. I would cut a board with 45-degree angles eventuating in a point on a pine board that could serve as the bow for the boat. I would then give them scraps of wood to nail into the board for whatever they imagined for engine rooms, etc.

They took these masterpieces, most often a bit bigger than what common sense dictated, into their baths that evening and played with them. This was great for the two- and three-year-olds. Although their mother complained to me about the size, the kids enjoyed them a great deal. My secret was to have short projects for them to do and allow them to wander off when they had enough.

Even better was to hold it up before they were done so that they wanted to go back to the unfinished project, capitalising on what we termed the 'Zeigarnik Effect' in experimental psychology. I did this with their fishing careers, and it worked splendidly there as well. It is always good to remember that their attention span is much shorter than an adult's. It is also good to have them make something for themselves, and even better yet, do something for a parent. This allows the pride in a job well done element to enter their efforts as well.

Marc A. Lindberg, Eastern Cape

Ed replies: *Thank you for your input, Marc. I really like the idea of the Zeigarnik Effect to keep the children, especially young ones, excited about the prospect of returning to and finishing the projects.*

Reader's projects

The Home HANDYMAN

www.homehandyman.co.za

Willing to share your latest project with our readers? Send a step-by-step write up of how to make the project, along with step-by-step photographs (at least 300kb) and a picture of the finished product.

Email projects and photographs to:

editorial@homehandyman.co.za

Our competitions – the fine print

Prizes may not be exchanged for cash. The closing date is stipulated by the competition box. If not stipulated, it closes on the last day of the issue. For example: Jan/Feb edition. All competitions close on the last day of February. To enter simply e-mail your answer to: editorial@homehandyman.co.za and include your name, surname, address and a day time contact telephone number with your entry. Unless otherwise stipulated, competitions are lucky draws and the correct entry drawn on the closing date will be the winner. The prize may differ from the picture shown. By entering this competition you agree to all rules and accept that the decision of the publisher is final and that no correspondence thereto will be entertained. This competition is open to all readers of *The Home Handyman* except employees of THH, BB Print and employees who work for the company that sponsors the prizes and their immediate families. Prizes not claimed within 60 days will be forfeited.

The East Coast Radio House + Garden Show is back

The East Coast Radio House + Garden Show is set to take place from 1-9 July 2023, at the Durban Exhibition Centre. This year's theme 'My Home, My Way', will come alive in a symphony of colour, sounds and tastes. Uncover how to reimagine your most treasured space that incorporates your ultimate comfort, entertainment, functional living spaces and a sustainable lifestyle.

This year, the expo is re-invigorating its 9-day experience with everything you need to turn your home and garden into your ultimate sanctuary. Discover the latest trends in home decor, technology, sustainability and gardening, try your hand at some exciting DIY, or sample delicious local food and drinks. With something for everyone to enjoy, you'll be spoilt for choice discovering exhibitors that will inspire innovation and spark ideas to make your home your own.

Along with the show favourites, like the Home Grown Design Fair, the Hirsch's stand and the Foodie Fair, the Property Pavilion will also be back for the second consecutive year but with even more developments on display and exciting insights and property education delivered by experts from the industry.

For more information, visit www.housegardenshow.co.za or follow Instagram and Facebook using @housegardenshow

Secure your home this winter with this smart tech

Winter season is upon us and days will become shorter while nights become longer meaning that households will have to grapple with burglars that will want to take advantage of the colder and darker season.

According to data released by Stats SA around the Experience of crime in SA over the 2021/22 period, housebreaking incidents were the most common crime experienced by households in South Africa.

1.4 million

house-breaking incidences occurred with an increase in the percentage of households that reported the incidences to the police increased from

56.1% (2020/21) → **59.2%** (2021/22)

Stats have also shown two periods during the year where break-in incidences are at peak; December festive season when homeowners have travelled and in the June winter period. The sophisticated way burglaries occur means that homeowners invest in more than just traditional lock and chain security measures to keep their homes safe.

"We all want to feel the comfort of knowing that our prized possessions, our pets and even family members are safe and sound, especially considering that criminal activities have become even more advanced," says Candace Booysen, Buyer (D.I.Y). "That's why we've invested in advanced smart home products to empower South African homeowners to monitor and safeguard their homes in real-time, to receive alerts when something suspicious is detected."

Smart home security devices, such as video doorbells, Wi-Fi cameras and motion sensors offer advanced protection and peace of mind. Here is how these devices help secure your home during this period.

Smart doorbells provide an extra layer of security

Smart doorbells, like the Ezviz DB2 2K battery-powered doorbell and the second-generation Ring Video Doorbell, allow you to monitor your front door in real-time, even when you're not at home.

With features such as two-way audio communication, advanced motion detection, adjustable motion zones, and high-resolution video streaming, these devices allow you to see potential intruders and providing an extra layer of security.

Smart Wi-Fi cameras for 24/7 surveillance

You no longer require a multi-channel CCTV system to monitor your home when you are not there. Smart Wi-Fi cameras are easy-to-install, simple to operate and allow you to watch over the things you love most from your smartphone.

Wi-Fi cameras like the Ezviz Dark Fighter Bullet IP Camera and Netatmo Smart Outdoor Camera offer around-the-clock property surveillance, ensuring you can monitor your home from anywhere, anytime. For example, the Ezviz Dark Fighter features revolutionary dual-lens colour night vision – one lens

records the ambient brightness and the other captures colour information, with the merged image offering unparalleled detail and realistic colour.

The Netatmo, on the other hand, features pet detection and a loud 110Db siren to alert anyone in the vicinity that there is an intruder.

Smart motion sensors for intrusion detection

Motion sensors are following the rapidly moving trend towards wireless options, which means they are no different to Wi-Fi cameras and smart doorbells. Installing them is faster and easier than before, making them an integral part of any home security system. Best of all, they can alert you when they pick up any movement in and around your home, making them a must-have.

Motion sensors like the Yale SR-PETPIR Smart Pet-Friendly PIR Motion Detector and Securityvue SVWMS4 feature customisable sensitivity settings and pet-friendly features, providing targeted protection without unnecessary false alarms.

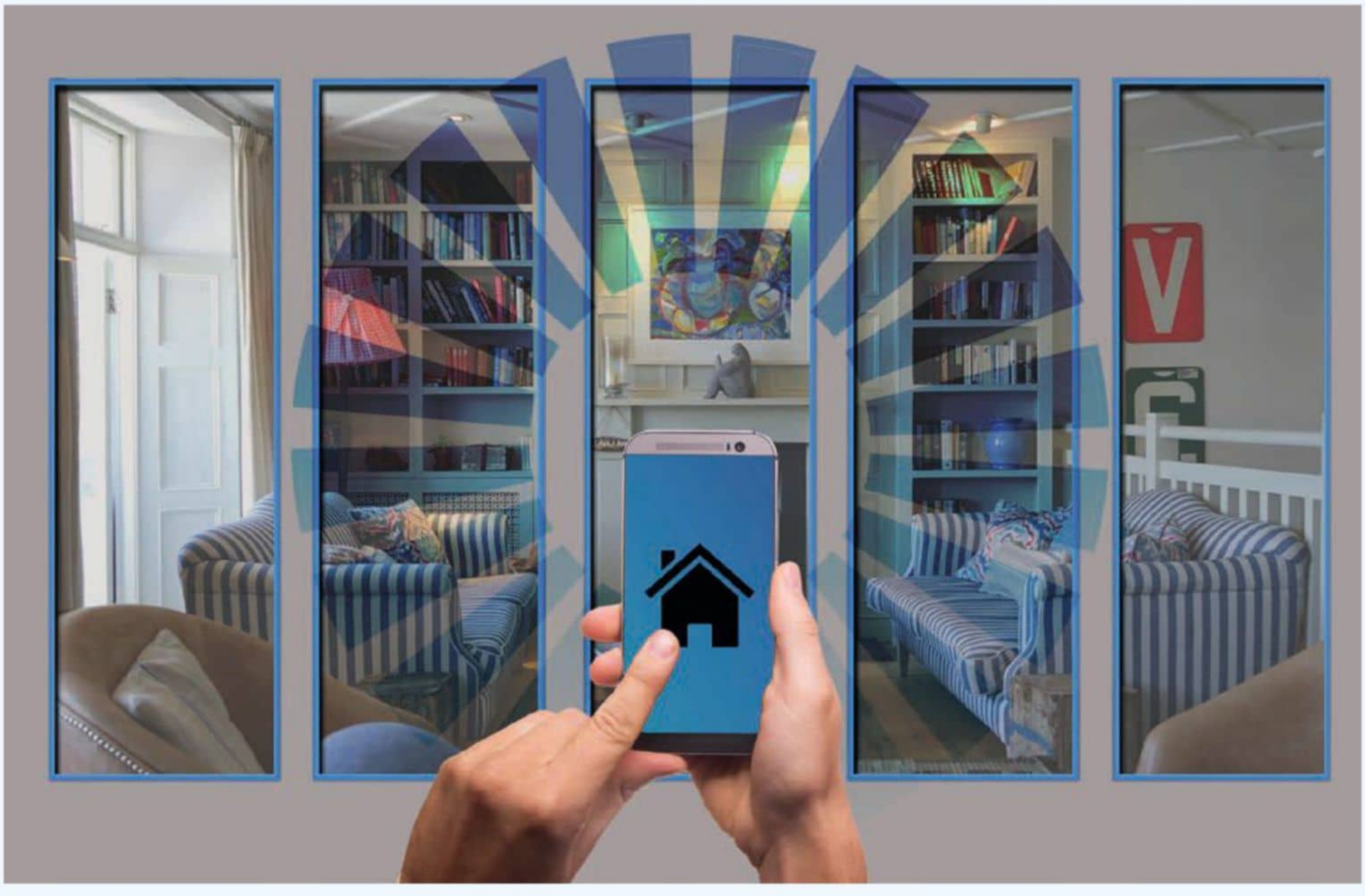
Smart lighting for automated security

Intelligent home automation systems make life more comfortable and give you the security by helping you deter potential robberies and protect your home from break-ins.

Smart lighting options, such as the Litemate LM043, Bneta GU10S, and Xiaomi Mi LED Smart Bulb, can deter potential intruders by creating the impression that someone is home or awake. You can schedule a timer, with the option to remotely control the lighting system from your smartphone for added convenience and comfort.

“Investing in advanced smart home security devices, means that homeowners can ensure the safety of their properties and belongings. Builders has a wide assortment of technology solutions for customers that can be used to enhance their homes in areas of security and lighting to help prevent intruder access in a safe and convenient way. We encourage customers to check out these solutions and find ones tailored to their needs and secure their homes from unwanted burglaries,” concludes Booysen.

For more information, visit www.builders.co.za



HOW TO CHOOSE THE BEST TILE FOR YOUR HOME PROJECT

Not all tiles are created equal. Well, they're basically the same, but there are many small differences to consider when deciding the application intended.

Tiles are a combination of clay, minerals and solvents that are shaped and sized and then heated to very high temperatures. At this point, the tile can just stay as is and is considered finished. It's unglazed and without decoration. Without the glaze, the tile is very porous and, though attractive in a rustic way, it wouldn't be wise to use it at this stage in areas where spillage might be common, like the kitchen.

Glazing adds a non-porous element that's usually impermeable and therefore good for all areas, including kitchens and baths, foyers and countertops. A good idea is to take this one step further and seal the grout around the tile so that it's also waterproof.

Besides being beautiful, ceramic tile is a desirable surface. Let me count the ways: It's strong, colorfast, and flame-resistant, it doesn't conduct heat or electricity, it's hygienic, it won't absorb odors or emit hazardous chemicals, it won't swell or contract in extreme temperatures, and it's easy to clean.

Where do these tiles come from? All around the world. Is tile from Spain better than tile from France? No, the only real differences are in design and perhaps shape.

There are some things to consider before buying, though. If the tile is to be used outdoors, look for weatherproof tiles. It it's to be used outdoors and you're going to walk on it, take it a step further and buy a slip-resistant tile. If you find just the right tile but it's not slip-resistant, not to worry — you can have it treated for slip resistance.

Did you know that 45 percent of all accidents happen in the home and that 95 percent of those accidents involve slipping and falling? With that in mind, it might be wise to treat all your tile floors with this slip-resistant application. Ask your tile dealer or installer.

If the tile is to be used on a kitchen counter, find one that is not only glazed but also scratch-resistant. You won't want to use it as a cutting board, but it should be durable enough that you can set pots and pans and cooking utensils on it.

Is the tile going to be put on a wall? It will probably receive little abuse in this position, so hand-painted beauties can be in the limelight here.

But walk into a tile showroom or home improvement store, and you may be overwhelmed with options. Cement or porcelain? White or off-white subway tiles? Glass tiles etched and painted with songbirds or a marble mosaic that looks straight out of Pompeii?

Which tile you choose depends on your budget, your style and how you need your space to function. Keep in mind that tile installation is complex, and many pros received lousy feedback from consumers. Be sure to hire a reputable installer and to get several bids for the work to ensure you're getting a fair price.

Traffic-ready tiles

You wouldn't do thin long-johns to ski down a mountain, so don't pick tile that's too easily scratched or permeable to cover your walls, floors or countertops. Most tile store staffers can advise you on which tiles fit certain spots. For example, those frosted green glass tiles may look gorgeous, but you may want to save them for your kitchen backsplash, not on a high-traffic floor where they are likely to crack. Marble boasts classic shine and luminosity, but know it can stain and crumble if it's installed on kitchen counters.

A material whirl

What your tile is made of is largely a matter of personal preference and budget. Crave a sleek, contemporary look? Consider larger, slab-style marble tiles for a bathroom wall and floor. Craving a rustic-style kitchen? Encaustic (cement) tiles in a Med-cool print could summon a welcoming vibe. You can even find leather and metal tiles, though the former are not suited for rooms with dampness or for most floors.

Keeping up with trends (or not)

Tile styles, like other household finishes, change more quickly these days thanks to Pinterest, blogs and a design-hungry populace. It's helpful to stay current, especially if you plan on selling your home in the next 5 to 10 years.

What's your budget?

You can spend a lot on tiles or a little. Many inexpensive tiles look terrific when installed well; some expensive styles (mosaics, rare marbles) might be worth it in smaller areas or if you really want a design punch.

Slippery issues

Some floor tiles get slippery when wet (a potentially dangerous issue in kitchens and bathrooms). Untreated marble styles can be treacherous, and the larger the size of your tiles of any kind, the higher the chance they will make you go head over heels in a bad way.

The industry uses two measurements: the SCOF (static coefficient of friction) and the DCOF (dynamic coefficient of friction). You will want a SCOF score of 0.6 or greater and a DCOF score of 0.42 or greater. Or you can usually look on the box of tile or ask a store pro for help; you need a tile that is suitable for floor applications. And smaller tiles are also a good way to combat slick surfaces — the larger amount of grout makes them, for lack of a better term, grippier.

Longer shelf life with some colours

Tiles come in as many colours as you can imagine. If you like bright red or neon green, there's probably a style you can buy or special order. But classic colours – whites, greyish-veined marble, black-and-white basket weaves – have a longer shelf life and are better for resale. And much like in fashion, mixing neutrals and brights can have a dramatic effect: Think grey marble floors in a kitchen with a rainbow-colored, Mexican-tile backsplash.

Considering size and scale

Smaller tiles can create a lovely effect in a small powder room. In a larger space, say a basement den, large wood-look tiles could mimic wide-oak flooring.

TILE AN OUTDOOR SHOWER

Recently I built a luxurious outdoor shower and, in this step-by-step article, I will show you how I installed the natural stone and the tiles. The length of the shower is 200cm and the width is 100cm. Read the captions to see how I did it.

>> Elias Stratakos

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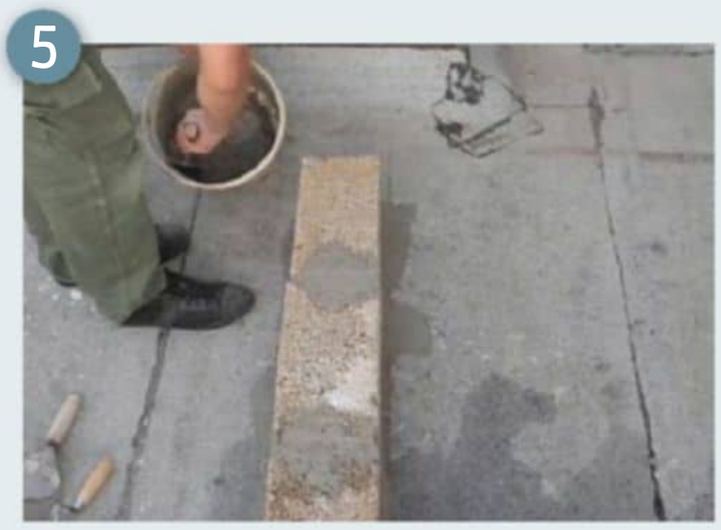

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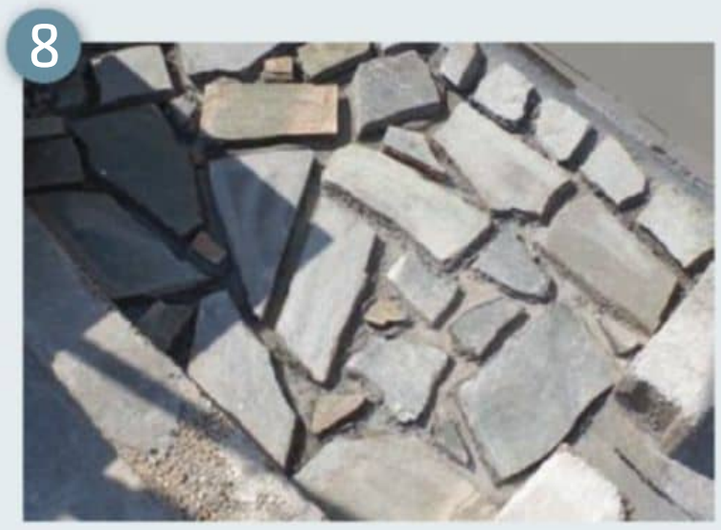

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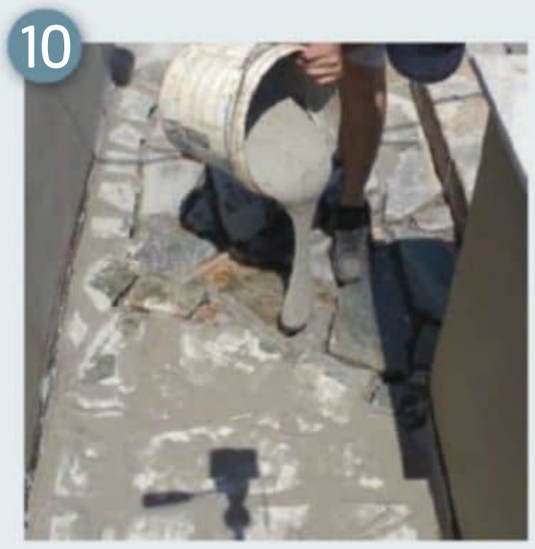
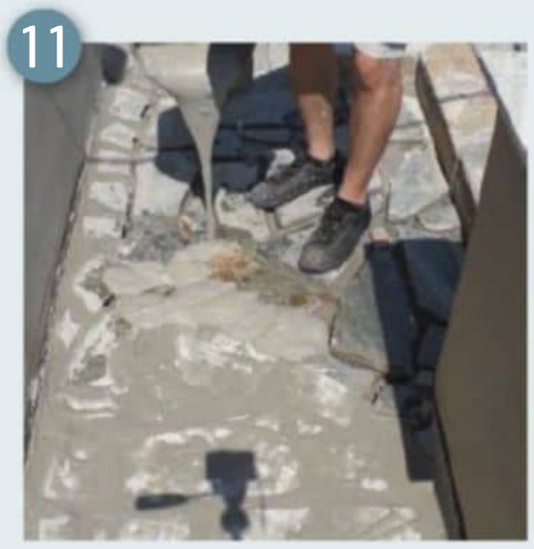
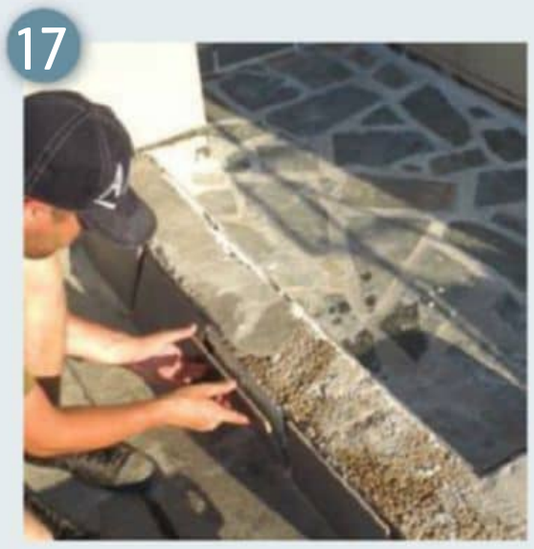
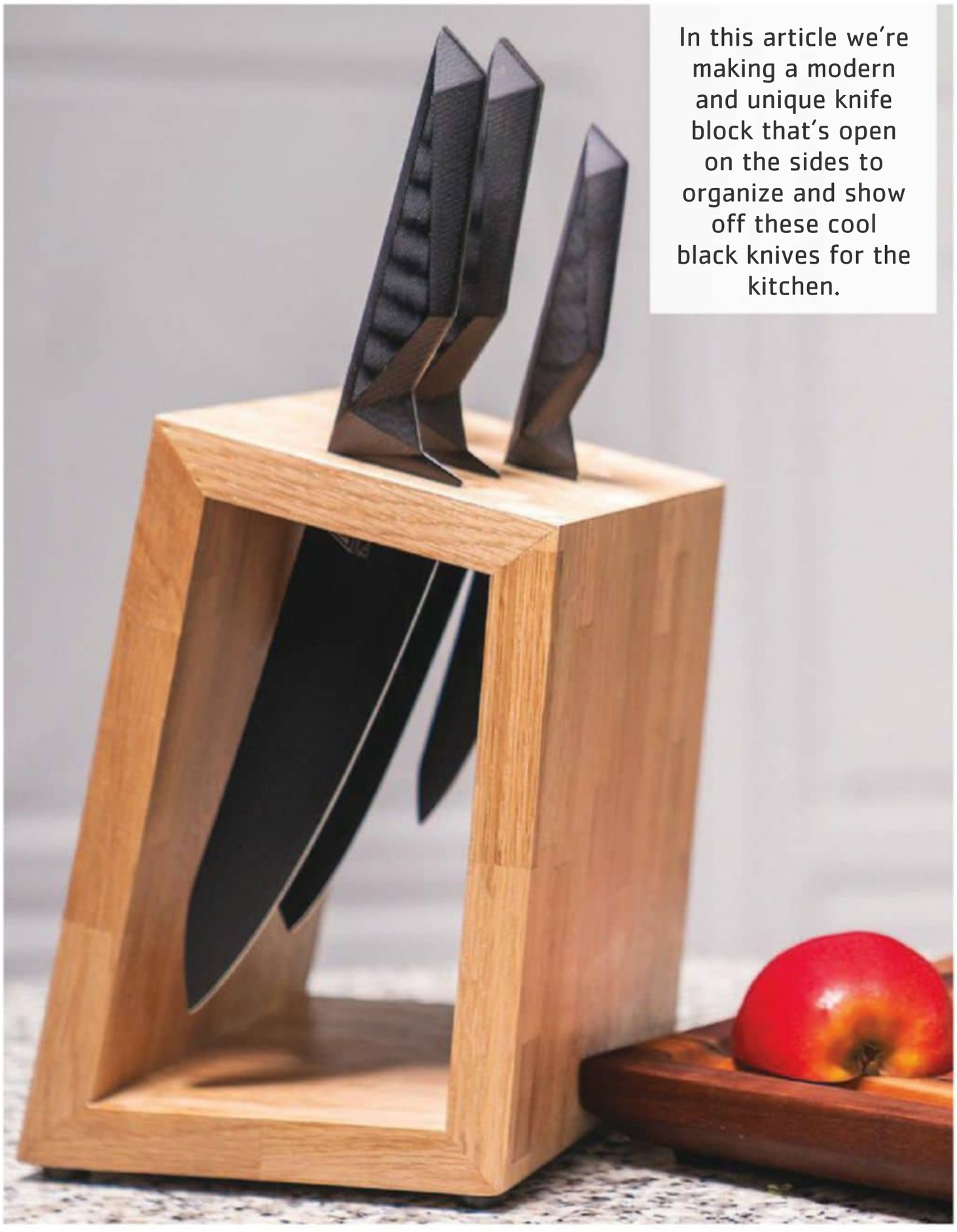






1. Firstly, for the mortar, add sand, cement, a little lime and water 2. Then, with a plaster mixer, mix well, until all ingredients become one single mixture 3. Once you have designed, with a marker, the limits of the shower on the floor, place the concrete blocks one by one 4. Leave a gap at some point to lead there the water from the shower 5. When you finish, let it dry for one day 6. Wash the natural stones, on both sides, so that they can be placed securely on the mortar 7. Place the stones one by one and give them a slight slope towards the point where we have made the gap 8. When you finish, let it dry for one day 9. Mix the grout, a little cement and a little sand, with water... 10. ...to put it between the stones 11. When you finish, let it dry for a while 12. Now take a putty knife and remove the grout that there is on the stones 13. Drag a wet sponge across the whole surface very softly, so the grout and the stone to be at the same level 14. Repeat the same process several times until it is completely clean 15. For the tiling, first place the ones on the side and then the ones on the top of the concrete blocks 16. After you have sprinkled water on the concrete blocks, evenly spread the tile adhesive with a plastering trowel with teeth 17. Before you place the tile, dip it in water and then press it until it is aligned with the others 18. Leave approximately one cm between them so that we can place the grout later 19. When you finish, let it dry for one day 20. Place the grout with a putty knife and press well to fill all the gaps 21. After a while, take a wet sponge and clean the gaps very smoothly. Repeat the same process several times until it is completely clean 22. Let it dry for one day and then wash the whole construction very well 23. At the end paint the stone and the grout with a stone varnish



In this article we're making a modern and unique knife block that's open on the sides to organize and show off these cool black knives for the kitchen.

PIECE OF SCRAP

What you will need

- Chef knife
- Santoku knife
- Utility knife
- Paring knife
- Digital angle gauge
- Palm router
- Flush trim template bit
- Steel plate
- Jigsaw
- Downcut bit
- Finish
- Rubber feet

I made things extra difficult for myself by using white oak wood scraps and offcuts that most woodworkers would consider unfit for anything more than a firepit. I glued the pieces into a small edge grain butcher block panel to make the sides for the project. The slots on top were cut to fit my knives: 8″ Chef's Knife, 7″ Santoku Knife, 5.5″ Utility Knife, and a 3.75″ Paring Knife. I really love the end result! Hope you guys enjoy the build as well!

Step-by-step guide

Step 1: **Breaking down scraps**

I was cleaning out the shop and found a bunch of white oak offcuts from a project I just completed. So, our first step is to rip the pieces down to 25mm (you can buy them at this size if you don't have the machinery at home). This will be the thickness of the panel we'll glue up later, because they're going to be face glued together. Then, use a crosscut sled to cut the pieces down to random lengths. The most important thing is to make sure the ends of the pieces are nice and clean. The final length doesn't matter.

Step 2: **Glue up**

In order to glue up the strips, we'll need to put a piece of MDF on top of the clamps so the small pieces won't fall down. I also applied a layer of packing tape on top of the MDF so the glue won't stick to it. Once all the strips are cut, we'll apply glue to the faces and the ends of the pieces to glue them up into an edge-grain butcher block.

After the glue has dried, we'll run the panel through the planer to clean up the glue and smooth out the surfaces. If you don't have a planer, sand thoroughly.

Step 3: **Cutting mitres**

Looking at the model from a side view, we can see that the angles on all four corners are different. The bottom right corner is formed by two 47.5 degree mitres, the bottom left are two 39 degree mitres, the top left is two 45 degree mitres, and the top right corner are two random angles. The ones that are 45 degrees and above are pretty straight forward to cut. We'll just lay the panel flat on the table saw, tilt the blade to those angles, and make the cut. But since

we can't tilt the blade less than 45 degrees, we'll need to use a tenoning jig to hold the workpiece vertically, and set the table saw blade at the complementary angle to make the cut. So, in the case of the 39 degree angle, we'll need to set the blade to 51 degrees.

For the last set of angles, I'm just going to cut the top panel to 48.5 degrees, but not make the final cut on the back panel yet, because we'll do a dry fit with all four pieces to lay out the final angle and where it needs to be cut. This is the easiest way to give us the best results.

Once all the mitres have been cut, we can use the tape method to glue up the frame.

Step 4: **Cut recess for plate**

Even though it's not a solid knife block, it weighs quite a bit! I still thought that it would be a good idea to add a bit more weight to it. So, I decided to attach a steel plate to the bottom.

To attach this plate, we're going to use a router and a flush trim bit to cut a recess in the bottom surface for the plate to sit into. First, we're going to use a jigsaw to cut a rectangular hole in a scrap piece of plywood, which will act as our template. Then we'll attach the template to the bottom surface of the knife block with some double sided tape. And the bearing on the bit will ride along the edge of the template to cut out the recess.

Step 5: **Cutting knife slots**

I've only got four knives, a chef's knife, a santoku knife, a utility knife, and a pairing knife. These knives have a blade thickness of roughly 2mm, so I'm going to use a 1/8" (around 3.2mm) bit at my router table to cut these slots. The fence on the router table controls the position of the slots, and the stops on the fence will control the length of the slots. One thing to keep in mind is that the longer the slots, the more the knife will tilt inside the slot. So, I only cut the slots about 3mm longer than the widest part of the knife. I've attached an image of the position and size of the slots. Yours may differ depending on the knives you have.

Keep in mind, the bit is pretty small, so only take about 2mm cuts per pass. It'll take some time, but it's better than a broken bit!

Step 6: **Sanding and finishing**

All that's left to do now is a little bit of sanding and apply finish. I like to use a water-based topcoat because it's easy to apply, dries fast, and best of all, it doesn't darken the wood like most oil-based finishes do. So, I think this is much better for light coloured woods like this.

After finishing, I will apply some rubber feet on the bottom. Since the knife block is likely to come in contact with water often, the rubber feet I use here are much better than the ones that stick to the surface.

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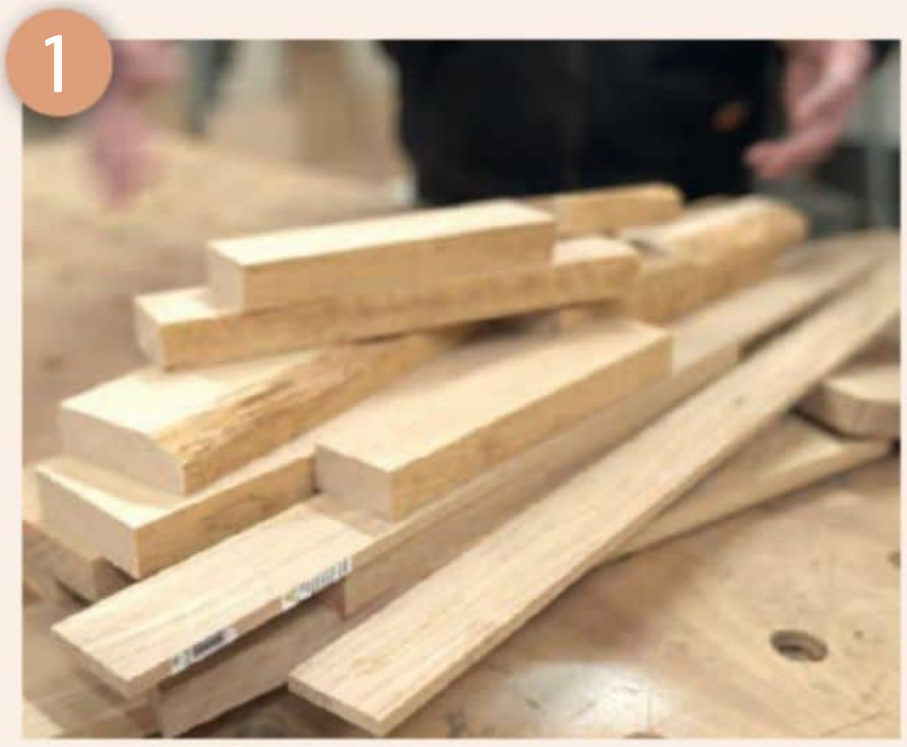

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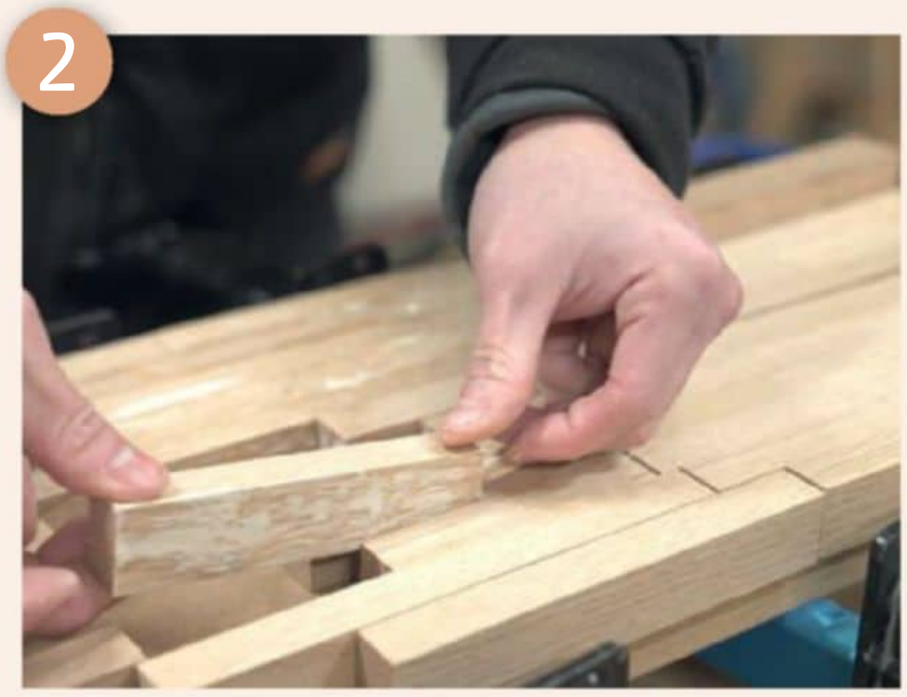

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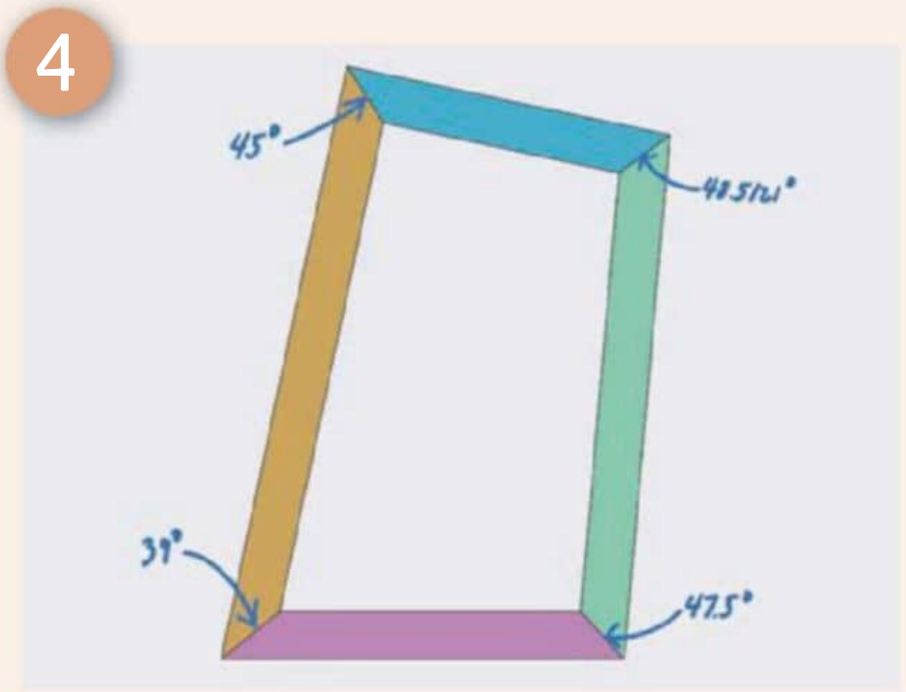

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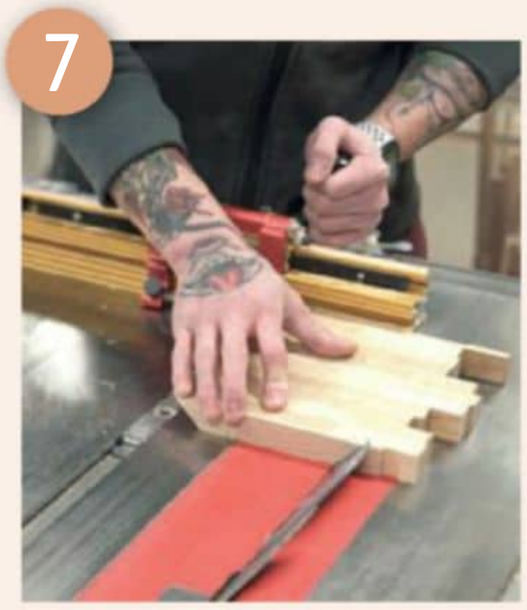

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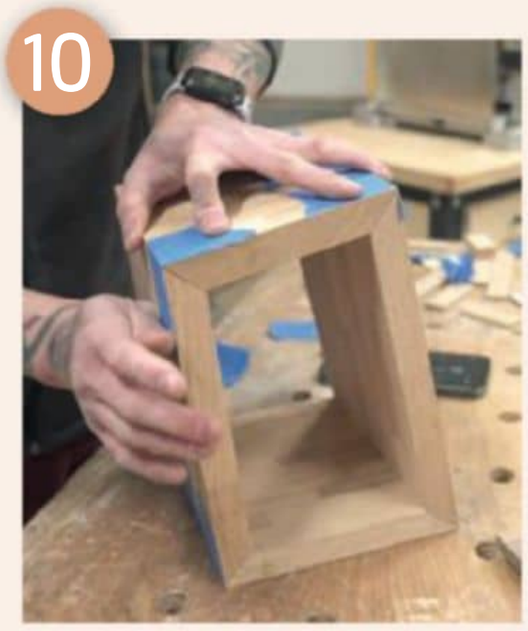

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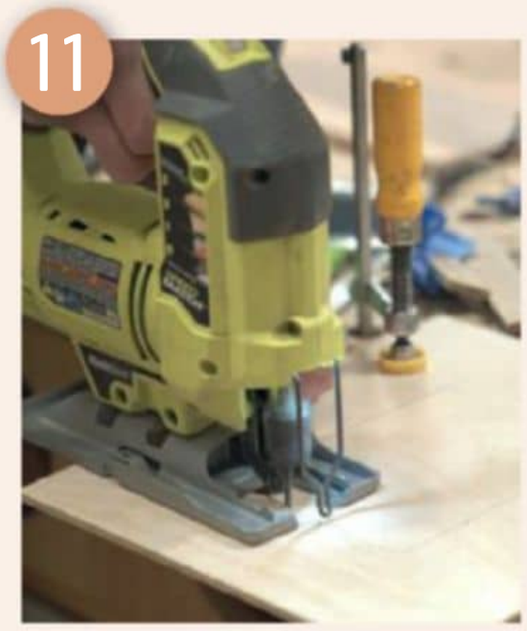

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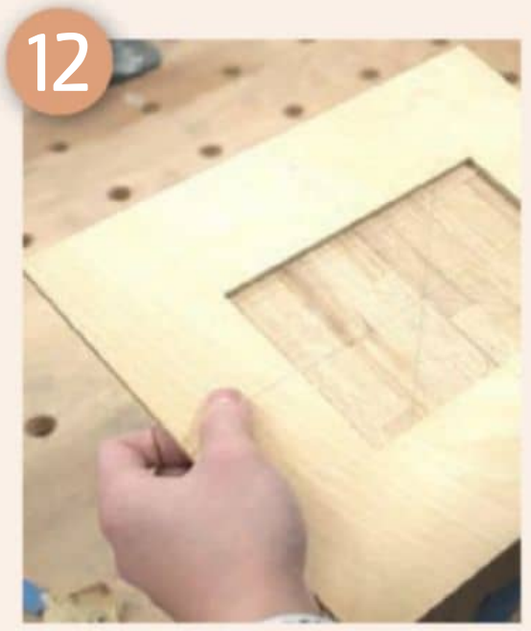

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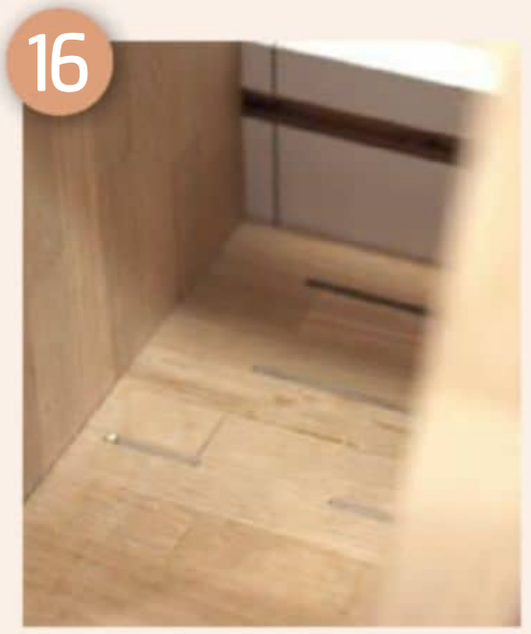

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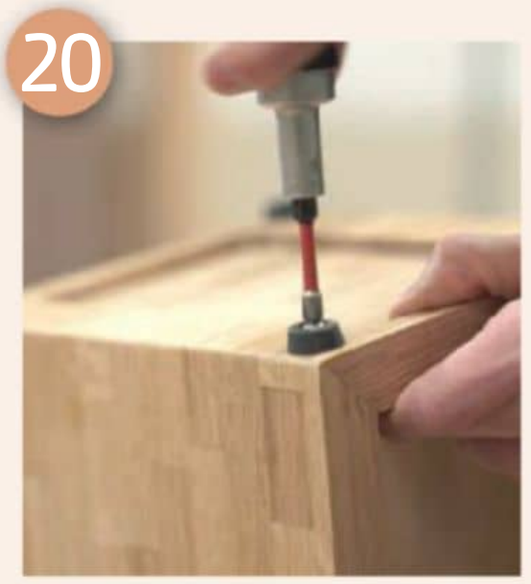
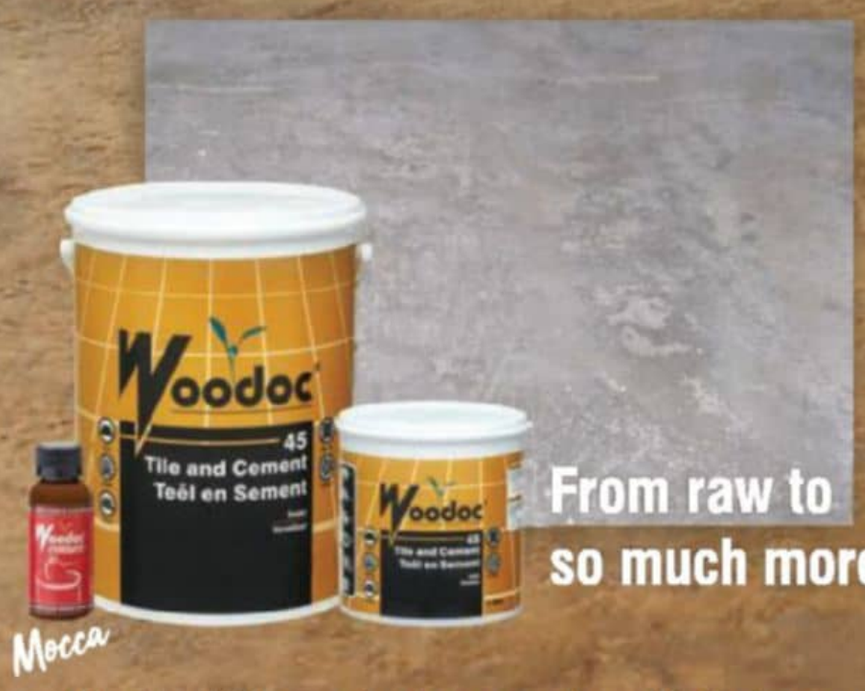


1. I used white oak wood scraps and offcuts for this project 2. I use a crosscut sled to cut the pieces down to random lengths 3. Then glue the pieces into a small edge grain butcher block panel 4. The angles for the project 5. Another view of the angles 6. Lay the panel flat on the table saw, tilt the blade to those angles, and make the cut 7. Since we can't tilt the blade less than 45 degrees, use a tenoning jig to hold the workpiece vertically, and set the table saw blade at the complementary angle to make the cut 8. Marking the angle for the final cut 9. Once all the mitres have been cut… 10. We can use the tape method to glue up the frame 11. I decided to attach a steel plate to the bottom – use a router and a flush trim bit to cut a recess in the bottom surface for the plate to sit into 12. The recess cut out 13. Attaching the steel plate 14. Mark the cuts for the knives 15. I used a 1/8" (around 3.2mm) bit at my router table to cut these slots 16. View from the inside 17. Making sure the cuts are correct 18. Sand the unit 19. Apply your finish 20. Fit the feet and then the baseplate

Sealed with *personality*

The Woodoc Way



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Woodoc 45 is a water-borne sealer, suitable for unsealed, porous substrates like this concrete garage floor, eliminating dust caused by unsealed surfaces.

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Dawnlibold 2027E

I am completely remodelling my bathroom and the old toilet was ugly and wasted a lot of water, so I decided to replace it with a new water efficient model.

HOW TO INSTALL A TOILET

Water efficient toilet models maybe a little more expensive on upfront costs, but the long term saving for the planet and your water bill are worth it.

What you will need

- A toilet with any nuts, bolts, etc. that come with it
- A wax toilet seal (It's round, made of wax, and is usually easy to find in the plumbing section of any store that also sells toilets)
- A wrench
- A toilet seat/lid (if your toilet doesn't come with one. Toilets usually have very standard sizes, just remember to check what type of bowl your new toilet has)

Step-by-step guide

Step 1: **Setting in the bowl**

This instructional is for a toilet with the inlet/outlet pipe located in the floor. Carefully turn the toilet upside down. Squish the wax ring around the hole, being careful to make sure it seals all the way around. This is important if you don't want the contents of the toilet flowing over the floor.

Around the drain hole there will be a metal ring attached directly to the floor with two bolt sticking up. If you are replacing the toilet, it is usually fine to reuse those bolts.

Being careful not to drop the toilet, turn it back over setting on the bolts (there will be holes in the base of the toilet for them).

Now, put the nut and washer on the bolt. Do not over tighten or the toilet will break. Tighten nuts until snug. Repeat on the other side.

Step 2: **The tank**

On many modern toilets the inner workings of the tanks are pre-installed, so all you have to do is set the tank on the bowl and attach the hose for water. The water hose is attached to a valve that will be off. It should be fairly obvious where to attach the hose on the back of the toilet (it will just screw on). Turn the valve on.

Congratulations, your toilet should now work.

Step 3: **The lid**

Installing a toilet lid is quite simple. Set the lid on the bowl of the toilet. The holes in the hinge of the seat/lid should line up with the holes in the toilet. With the lid should be to bolts that fit in the holes previously mentioned. Screw on the nuts snugly but not too tight. Snap the miniature lid over the head of the bolt.

If you've done everything right, now your toilet is fully functional!

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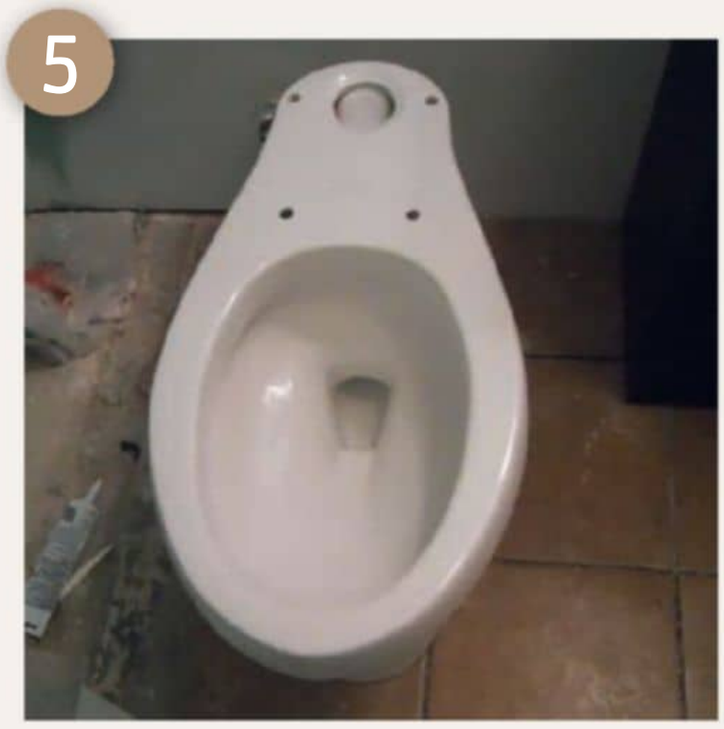

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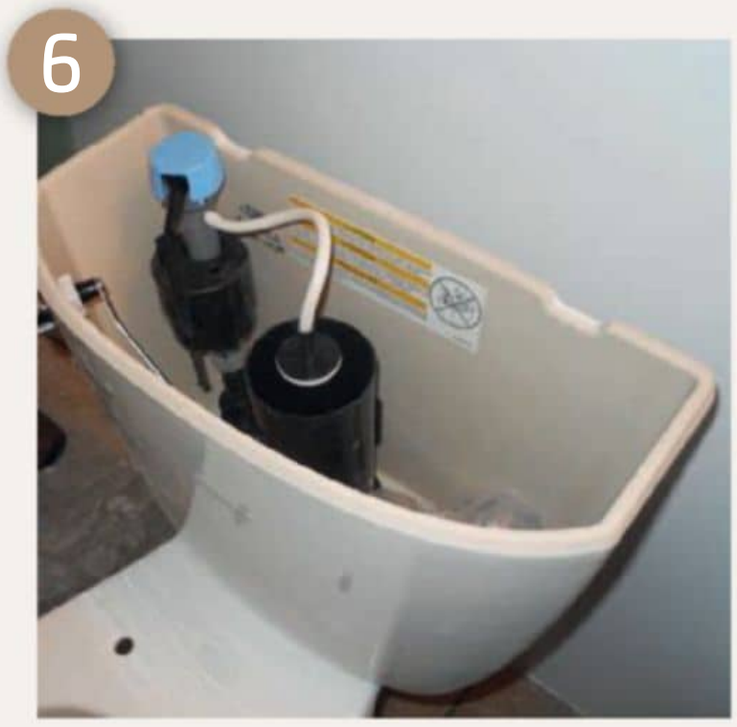

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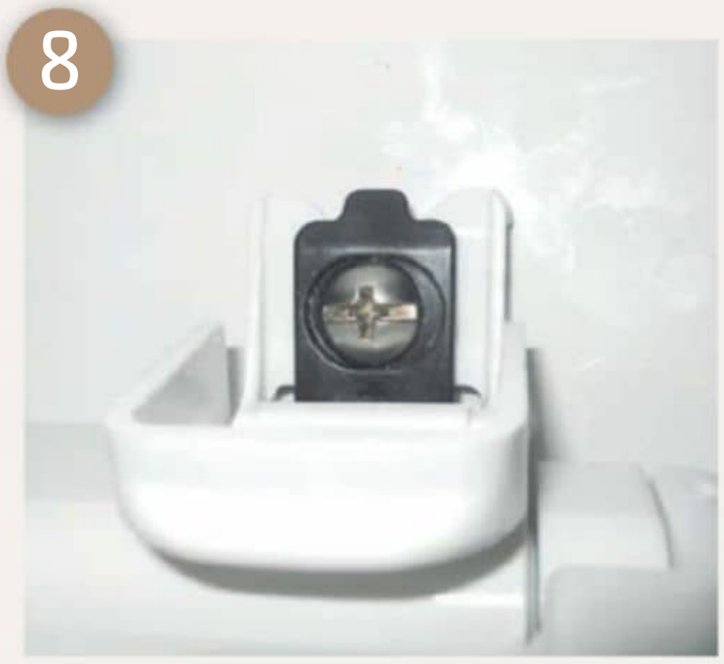

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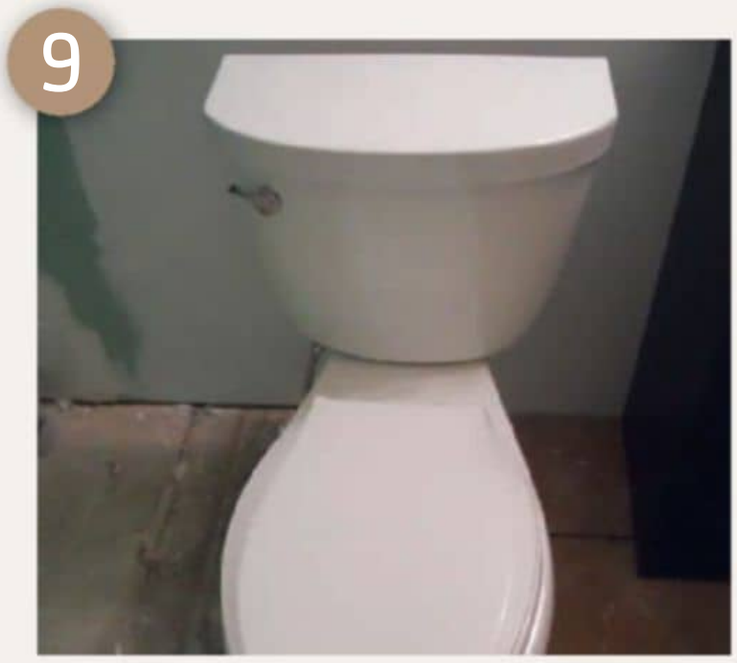


1. The metal ring that is attached to the floor holds the bolts that hold the toilet. 2. The wax ring in its packaging 3. Squish the wax ring around the hole, being careful to make sure it seals all the way around 4. This is the top of the bolt with the nut and washer 5. Being careful not to drop the toilet, turn it back over setting on the bolts Plumbing 6. On many modern toilets the inner workings of the tanks are pre-installed 7. Attach the water hose from the wall to the back of the toilet 8. Screw the nuts on the toilet lid snugly but not too tight 9. All done!

CONCRETE PLANS

What you will need

Tools:

- Track saw
- Table saw
- Mitre saw
- Biscuit joiner
- Tape measure
- Pencil
- Cordless drill and drill bit
- Clamps
- Concrete mixing tub
- Trowel
- Ratcheting straps
- Masking tape
- Palm sander
- 60/100/150/220 grit sandpaper
- Rag
- Paint brush
- Plastic sheeting
- Rubber mallet

Materials:

- Your selected wood
- Concrete mix
- Remesh
- Melamine board
- Screws
- Wood glue
- Tung oil
- Satin polyurethane
- Silicone
- Biscuits for joinery
- Mini floor protectors

This issue we will show you how to make a concrete coffee table. After looking online at countless coffee tables, I was unable to find something that would work for my space. So, I decided to build one.

Step-by-step guide

Step 1: **Design**

I created a 3D model using AutoCAD. This is optional – a napkin sketch is just as good!

I knew I wanted concrete to be the focal point for this design. I like the rustic look of it. The leg design is something simple and tasteful. The lighter colour of the wood next to the concrete really makes this table stand out in my opinion.

From my model I was able to extract all the dimensions I needed for construction.

Step 2: **Construct concrete form**

Melamine is used for the concrete form because of its smooth surface and it will not absorb any moisture (easy release after setting).

Using a table saw I ripped the side rails out of some scrap melamine. A mitre saw was used to cut the rails to the proper length.

I purchased melamine for the base, it was the cheaper option and will do the job. The base was cut to size using a table saw. I clamped the side rails to the base and drilled pilot holes. I fastened them together using wood screws.

Step 3: **Pour the concrete**

Apply masking tape to the inside

perimeter of the form to the base and the side rails. Silicone the inside perimeter. Evenly spread the silicone with your finger. Let the silicone dry and remove the tape.

The silicone will give a nice fillet edge to the concrete. Wipe on a wax finish to entire inside surface for easy mould release.

Mix concrete in a tub. Fill form to the halfway point and place in the remesh. Remesh will increase the tensile strength of the concrete. Fill to the top.

Vibrate out the air bubbles trapped in the cement by tapping all around and on the bottom of the form with the rubber mallet. Trowel smooth. Cover with plastic sheeting to allow for gradual curing; this will also prevent any cracking.

Step 4: **Construct coffee table base**

I reclaimed some old maple butcher block for the legs. A guy on marketplace was selling these on the cheap and I scooped it up in a hurry! I ripped the maple with a track saw.

Cut to length and mitred corners with the mitre saw. Cut slots with a biscuit joiner. Chamfer inside edges with table saw blade tilted at 45 degrees. This is for aesthetics only.

Spread wood glue on mating surfaces and inside biscuit slot. Insert biscuits and assemble. Use a ratchetting strap and wood clamps to hold together. Wipe excess wood glue and let dry. Sand entire base with 100/150/220 grit.

Wipe clean and apply three coats of satin polyurethane.

Step 5: **Finish the concrete**

Remove the concrete from the form. The concrete came out nice. Low amount of air pockets on the top while the sides had slightly more pitting. I like the look of it.

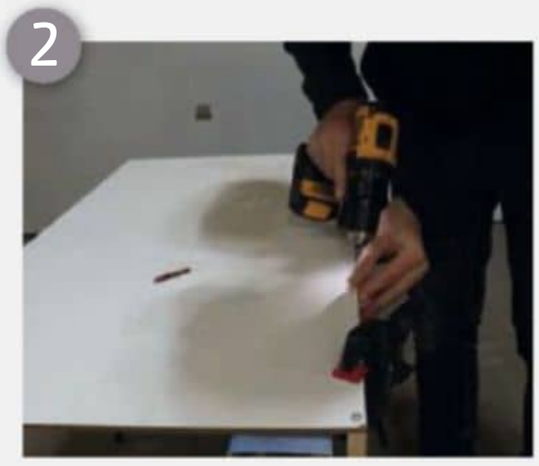
I wanted to expose the aggregate of the concrete, so I sanded with 60 grit until I was happy with the look of the surface. Continued sanding with 100/150/220 grit. Blow dust off with compressed air and wipe clean.

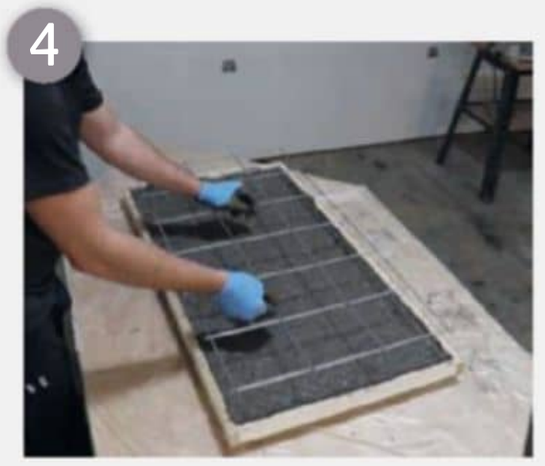
Apply two coats of tung oil. Wipe excess oil off with a rag after applying. Let dry. The tung oil gives the concrete a nice even dark colour.

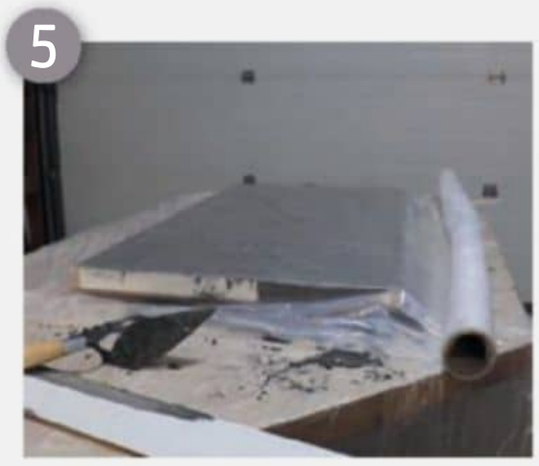
To completely seal the concrete, I applied two coats of polyurethane. The tung oil and sealer helped in filling the small voids.

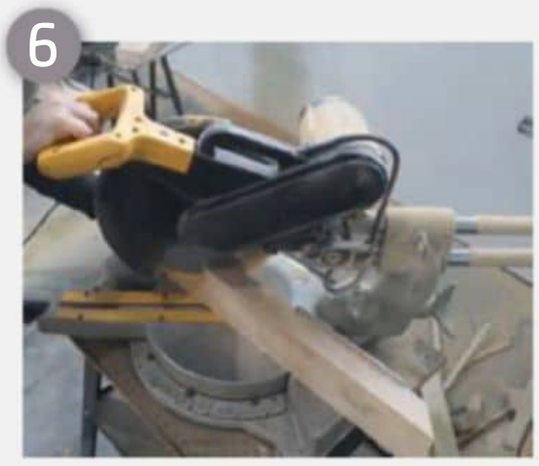
Step 6: **Final assembly**

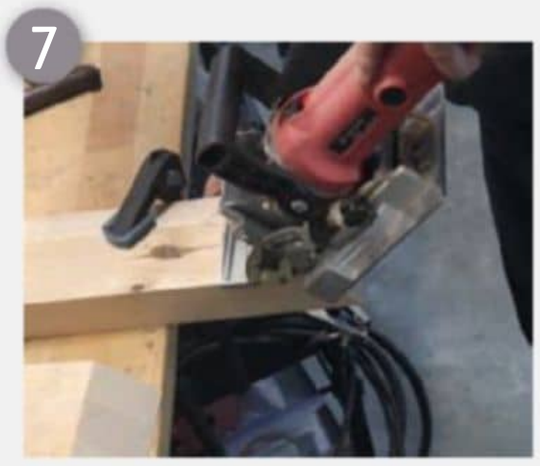
Apply mini floor protectors onto the top of the base. Place the concrete onto the base; the concrete is heavy enough that it will not budge. All done!

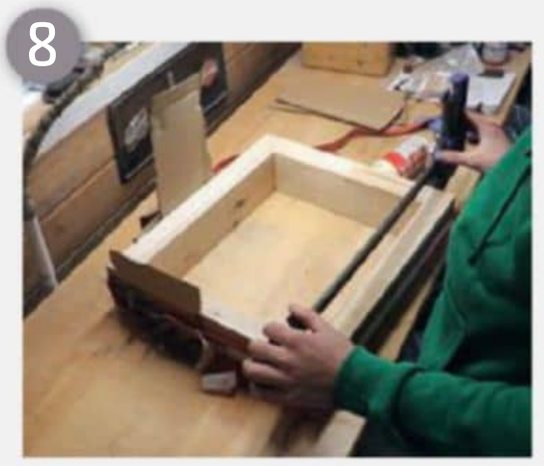


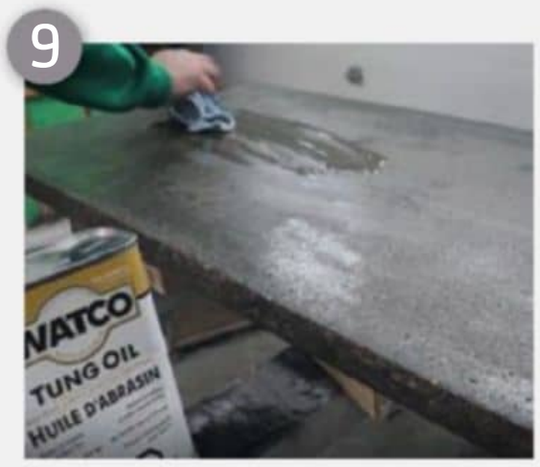












1. Melamine is used for the concrete form because of its smooth surface 2. I clamped the side rails to the base and drilled pilot holes 3. Apply masking tape to the inside perimeter of the form 4. Vibrate out the air bubbles trapped in the cement by tapping all around 5. Cover with plastic sheeting to allow for gradual curing 6. I reclaimed some old maple butcher block for the legs 7. Cut slots with a biscuit joiner 8. Put the table together 9. Apply two coats of tung oil

Get the most out of your angle grinder.

GRINDERS: THE GUIDE FROM EVERY ANGLE

Due to the rapid advancements in lithium-ion battery technology, the many angle grinder uses have expanded dramatically. This makes it a versatile tool used by a wide range of professionals. With so much flexibility at your disposal, the angle grinder also has a steep learning curve compared to many other tools.

Key uses for angle grinders

There are four key uses for angle grinders;

Cutting: Angle grinders can be used to make cuts in metal, ceramic and masonry. They are often used as an alternative to saws for cutting purposes, due to their manoeuvrability. Angle grinders are great at cutting material 'in-situ' (in its original place), which saves the hassle of moving the material to the tool for cutting.

Grinding: As the angle grinder name suggests, the main use for the tool is to 'grind' materials. An angle grinder can help smooth and remove excess materials, quickly and easily. An angle grinder can grind masonry or excess metal from welds.

Polishing: Angle grinders are also used for polishing surfaces using special polishing discs or mop attachments. The high RPM of angle grinders make them an great device for creating a polished finish on materials.

Sanding: Whilst a traditional sander is normally the best tool to use for sanding, a grinder can also be used with sanding discs. Using a sanding disc, an angle grinder can smooth the surface of metal and masonry.

KEY CONSIDERATIONS WHEN BUYING AN ANGLE GRINDER

Some of the key considerations when looking to purchase an angle grinder are:

Disc diameter

Disc diameter is a key choice to make when selecting an angle grinder. The larger the disc the greater the cutting depth of the machine. Usually, angle grinders with bigger disc diameters are also more powerful.

Most angle grinders have disc diameters ranging in size from 100mm to 230mm, with the 115mm and 230mm grinders being the most popular choices. Smaller grinders rotate the discs at a higher speed and are easier to handle. The downside of smaller grinders, however, is that they cannot cut as deep as larger angle grinders, and their discs need to be replaced more frequently as the wear rate is higher.

Wattage

Higher wattage will give more power for cutting through tough materials like thick steel. If the grinder is going to be used for long periods of time, then a higher wattage is also recommended.

Speed

Single speed and variable speed grinders are available. Variable speed angle grinders will enable more delicate work to be performed at lower speeds, but will usually result in an increase to the price of the machine.

Brushless grinders

Brushless motors are more powerful and have fewer parts to wear out, so are worth the extra cost in a demanding environment.

Power source

Angle grinders are available in mains 240V and 110V (for site work) and smaller grinders are now available in 18V cordless form. Recently, some 36V and 54V cordless angle grinders have been launched which offer a similar performance to larger, mains powered tools.

Safety features

Some larger angle grinders come with slow start, where the motor slowly increases to full speed, preventing it from twisting immediately on start-up. An anti-kickback function on an angle grinder causes it to cut out if the wheel gets bound up. Restart protection prevents the grinder from starting up again if it has overheated or has cut out and been left on.

Some grinders are equipped with a paddle switch, sometimes called a Deadman's Switch, which is a safety mechanism designed to ensure the grinder is held by two hands, and is used to stop the grinder spinning if the switch is released. These features typically add to the price, but will help to keep you safe and may also be mandatory on some building sites.

Extras

When you buy an angle grinder, they will quite often come with the grinding wheel, lock nut and a side handle. Some angle grinders can also come with grinding discs and carry cases included in the price. These grinders may be slightly more expensive than the basic model, but it will usually work out cheaper than buying everything separately.

Angle grinder safety

Angle grinders combine two dangerous elements together, a high RPM spinning motor with a sharp cutting disc. The following safety tips should always be considered to help avoid serious injury.

Ensure the device is switched off before you plug it in: Before plugging an angle grinder into the power source, make sure that the machine itself is switched off.

Read the manual and understand how it works: Even for an experienced user when getting a new power tool it is always a good idea to read the manual to ensure that you are completely familiar with the modes of operation and the features of the tool. Power tools are inherently dangerous machines, so this is very important.

Use the right grinding disc for the job: It is important that not only that you use the correct disc size for the angle grinder, but also that you use the right type of disc for the material. For example, using a metal cutting disc to cut ceramic and stone may at best wear the disc down too fast, but, at worse, may put you in danger by breaking the material.

Wear the right clothing and protective gear: It is always a good idea to protect yourself by wearing the appropriate safety gear when using an angle grinder. Not only can an angle grinder produce a lot of sparks, but it can also throw up cutting debris. For this reason, it is imperative to wear safety goggles. It is also a good idea to wear safety gloves. Depending on the circumstances and ventilation, it can be a good idea to wear a dust mask. This is beneficial when cutting masonry or ceramics, as in a closed environment these materials can generate a lot of dust. Using grinders in certain situations can also be quite noisy, so ear defenders may also be needed.

Use the grinder correctly: Some people remove the safety guard from the grinder, to make it easier to carry out certain jobs. This is a bad idea; the safety guard is there for a reason and should always be kept it in place. You should also always use an angle grinder with two hands, as they can twist out of your hands if you are not careful. Furthermore, you should inspect a power tool before you start a job and replace any parts before use if they are not in a good condition.

Keep your attention focused: Angle grinders are dangerous tools to use so it is important to keep focused and attentive to the job. Avoid distractions and take regular breaks.

Angle grinder discs

Angle grinder discs are interchangeable, which means you can select the specific size of disc for your grinder and the specific type of disc for the type of material you are looking to cut or grind. There is a wide range of different types of discs available for an angle grinder.

8 TIPS TO GRIND LIKE A PRO

1. When using an angle grinder, protect yourself!

Before you use an angle grinder, you'll want to grab some personal protection gear. The reality of the angle grinder is that it's a loud tool that kicks a whole lot of debris around. Plus, you're not always grinding or polishing. Oftentimes, the job entails cutting. If you get sloppy with a cutting wheel or simply have bad luck, that wheel could turn into high-speed shrapnel.

For these reasons, you'll do yourself a favour if you grab some hearing protection, long sleeves, gloves, and something to shield your entire face. You don't want to take a hot shard of cut-off wheel to the money-maker, after all. A grinder can also ruin your clothing, so wear protective outerwear if you don't want pinholes in your clothes from flying hot metal.

Tip: Having a cutting wheel fly apart on you at 10 000 RPM is no joke. There's nothing you can do when it happens. As a result, you want to always wear a full-face shield when using a cutting wheel –even when using a guard. Grinding and using a flap disc doesn't typically present the same level of danger, so the guard and adequate eye protection are often enough.

2. Perform a ring test on grinding wheels

We recommend doing what's known as a 'ring test' on any grinding wheel before affixing it to your grinder. You can actually do this on bench grinders as well. You basically suspend the grinder wheel from a pencil or other project. Then, gently tap it with the handle of a screwdriver or similar tool –anything not made of metal. Rotate it 180 degrees and do it again. A wheel in good condition should let out a distinctive metallic "ringing" sound.

That metallic ring comes indicates the integrity of the grinder wheel. An internally- or externally-cracked wheel typically stops the vibrations at the damaged point – preventing a clear ring. While the ring test does a good job of giving you

an idea of the integrity of the wheel, you also want to follow up with a quick visual inspection.

Once you're reasonably certain of the integrity of your grinding wheel, go ahead and mount it. The last thing we recommend before starting is to run that wheel on its own (pointed away from your face) for 15-30 seconds. This helps you know (by feel) if it's properly centred and mounted and if there are any issues with the wheel balance.

3. Angle sparks away from your body

Because angle grinders quickly remove lots of material, lower the risk as much as possible by positioning the tool properly. Using an angle grinder in different applications and with certain attachments calls for different angles. Ensuring sparks and debris fly away from your body reduces your chances of getting injured. Your work clothes will last longer, too!

4. When surface grinding and using flap discs

For surface grinding, use the flat part of the wheel, maintaining a 20°-30° angle between the tool and the work surface. Position the blade guard at the back toward your body. Use a smooth back-and-forth motion to guide the flap disc over the material. Let the wheel do the work, but feel free to apply enough pressure to ensure you're being productive. You can really grind down welds quickly in preparation for painting using this method.

5. How to hold an angle grinder when using cutting wheels

You should tackle cutting straight on since you want to use the edge of your wheel to cut into the work surface. Be careful not to bend the cutting wheel in any direction. In this mode, the guard always goes on top to protect you from debris. Wearing a face shield also protects you against premature disc failure. And remember – if the guard isn't between the cutting disc and your face – move it until it is.

Also – and this might go without saying – never 'plunge cut' a cutting wheel into the material. Cutting at the 12 o'clock position is a recipe for kickback and loss of control.

6. Guard yourself against kickback

Kickback occurs any time the grinder wheel stops suddenly. This forces the grinder in the opposite direction of the rotation at the point of pinching. Knowing how to use an angle grinder in a way that avoids this can keep you safe. For cut-off applications, this can happen when the waste piece sags under its own weight – suddenly pinching the blade and causing the tool to transfer all that rotational energy into a kickback event.

Guard against this by properly using blade guards and by supporting your material properly so it doesn't sag when making an abrasive cut.

You can also experience kickback when using abrasive wheels to grind down material. Corners, sharp edges, and other areas present possible points of kickback that can damage and/or stop a wheel suddenly. Take care to use the auxiliary handle in a way that gives you leverage to protect yourself should this occur. Never ever use a grinder with one hand!

7. Using a grinder for light work or sanding

For sanding applications, hold the tool at a 5°-10° angle to the work surface. For pretty much all grinder applications, apply only minimum pressure. You want to let the tool and the abrasive accessory do the hard work.

8. Your accessories need to match the rpm of the grinder

Check the manufacturer's specs when attaching your wheel, disc, or cup. The max RPM on the accessory should meet or exceed the max RPM of the grinder you plan to use. If the rated speed of the accessory is lower than your grinder, you run the risk of the wheel flying apart.

GET A GRIP

We show you how to make a very simple, but at the same time very sturdy and rigid, metal drill press vice without welding.

What you will need

Tools:

- Angle grinder with cutting and grinding discs
- Drill press (or just a regular drill) with bits for drill 10mm, 12mm, 20mm, and 38mm holes in metal
- M10, M12 and M20 taps
- Allen wrench
- A rotary tool with cutting discs
- Permanent marker, ruler, and sharp scraper for marking

Materials:

- Mild Steel U-Shaped Metal Beam (I used 14cm in width by 6cm in height)
- Angle iron 25 x 25mm
- M12, M10 Allen bolts
- M20 threaded rod
- M12 stainless steel round stock

Step-by-step guide

Step 1: **The main stock**

I started with leftover Mild Steel U Shaped Metal Beam. It is 14cm in width and 6cm in height. I measured and cut at 26cm, which will be the total length of the vice. The off-cut will be used later – because I want to squeeze as much as possible from this single piece.

Step 2: **More cutting**

Next, trimmed both sides to lower it from 6cm to 2.5cm in height.

To get a perfectly straight and levelled cut I used this homemade attachment for the angle grinder. A few bearings, bolts, and square tube convert this angle grinder into a rolling cutting machine. Of course, those cuts could be made by hand, but I wanted to try my jig in this

build and it performed extremely well. A single cut left a very nice and perfectly straight edge.

Step 3: **Slot in the middle**

I drilled two 38mm holes in both ends and with an angle grinder connected those to form a nice 38mm slot.

Step 4: **Finished bottom part**

On both sides, I marked, drilled, and tapped M10 holes. Here I want to make the vice a bit wider. I used a 25 by 25mm angle iron piece with drilled representing holes. This will extend the vice bottom which mostly will be used as a clamping surface. A bit of grinding was needed to make the whole surface perfectly flat.

The very last modification on this base was to drill and tap four holes in corners for M12 Allen bolts.

Step 5: **Making vice jaws**

Do you remember that off-cut? I will use it and cut a pair of angle iron pieces for the vice jaws. It not only helped to get the best use of the U-shaped metal beam, but it has a very nice shape also. The bottom part is thicker than the vertical one, which I like a lot. I managed to get only two pieces from that leftover so the third one I cut from a regular angle iron found in my metal scrap. Here you could see the angle iron shape differences.

Step 6: **Working on jaws**

Two angle iron pieces placed at the base ends will be secured permanently, while the middle one should move freely. The process here is the same as in all connection points in this build - drilling a pair of holes in each part to secure with M12 Allen bolts.

This angle iron is way too thin for my planned application, so I'll make it thicker by adding this 10mm of thickness flat steel strip. As the inner corner has some radius, I need to trim that steel strip bottom respectively to get the perfect fit.

Angle iron was drilled and tapped to make mounting points for that reinforcing steel strip. A pair of M10. Allen bolts secured them to one solid piece.

Step 7: **A hole for main vice screw**

Here is the answer to why such thickness was needed. In this palace, I will use an M20 threaded rod as the main vice screw.

This is a good example of how to drill holes in strangely shaped metal parts without a drill press vice. A simple support piece made of scrap wood and a clamp did the job.

After tapping it is hard to tell that all this thickness was achieved by sandwiching two metal pieces together. By looking at the thread, it looks like one solid piece.

Step 8: **Permanent parts fixed in place**

As I like to make stuff not only functional but at the same time look neat, I modified both sandwiched parts to a more lightweight and aesthetic look. The smaller part gave the idea of how the angle iron should be trimmed too.

And now both parts could be fixed permanently.

Step 9: **Mounting sliding jaw**

To keep the sliding jaw moving freely along the slot I will sandwich it with those two metal pieces. After drilling and tapping, all parts could be bolted together. And it slides way better than I expected.

Step 10: **The main screw**

To keep moving the sliding jaw I use an M20 threaded rod. Here I had to pay the price for using that nice shape-angle iron jaw. The bottom part is too thick for the M20 threaded rod. I marked and grinded the needed groove with the rotary tool. It took a while, but now the threaded rod fits perfectly.

Step 11: **Modifying the main screw**

To attach the threaded rod to the moving jaw, but at the same time let him spin freely – I use those two metal strips. First, I marked and grinded a groove on the rod with the angle grinder. Later on, I made a different size U-shape cut in the etch metal strip. Here Is how it works. The part with a bigger slot will act as a spacer between the jaw and the end of the rod.

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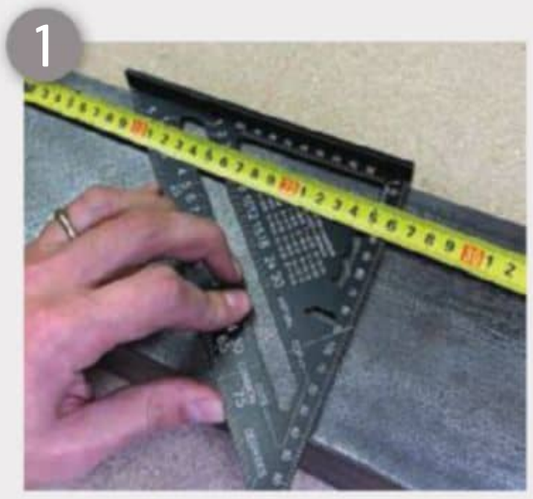

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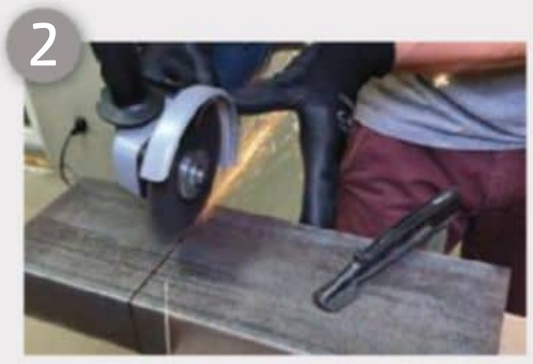

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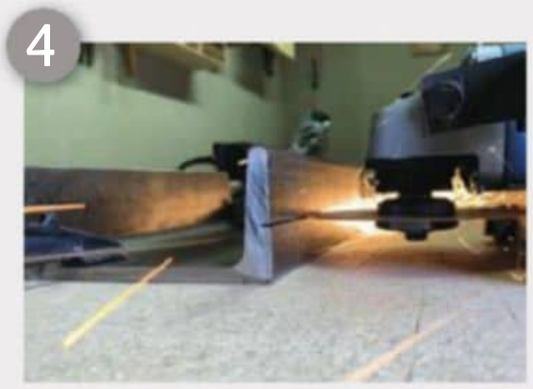

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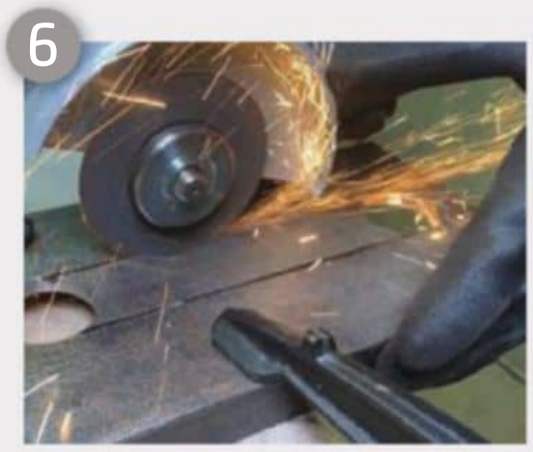

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The piece with a smaller slot will hold a threaded rod attached to the moving jaw and also let the rod turn freely. When the holes were drilled and parts mounted on the sliding jaw, I didn't like how it looked, so made small corrections. This time I modified only those two parts. I wanted to shape them in the same form at one time, so I bolted them together with a pair of Allen bolts while cutting and grinding them to the needed shape. It looks way better than before.

Step 12: **Working on handle**

Before attaching a threaded rod to the vice, I need to mount a handle. The perfect candidate is this 12mm diameter stainless steel rod. To join them together some drilling and grinding were needed. The threaded rod got a hole and a slot in the middle. Meanwhile, the stainless steel handle was shaped to fit in that slot. To keep two parts together I use a pin made from a nail and flatten another nail end. It holds in place and the handle moves freely.

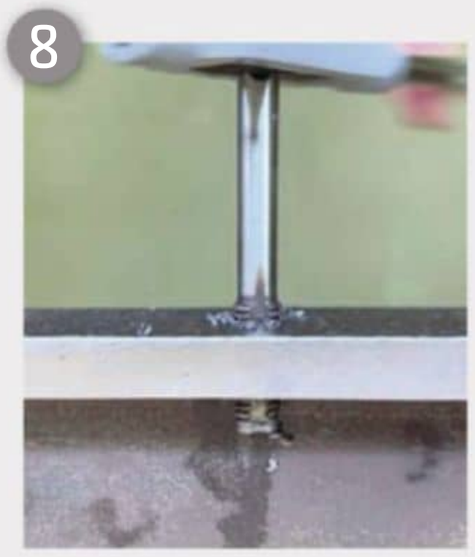
Step 13: **Final assembly**

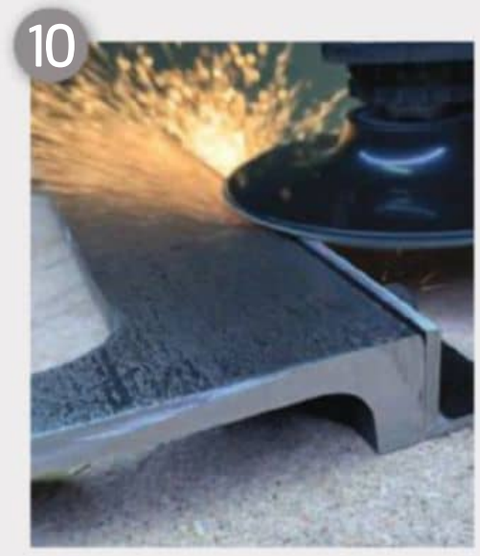
Time to mount it into the vice.

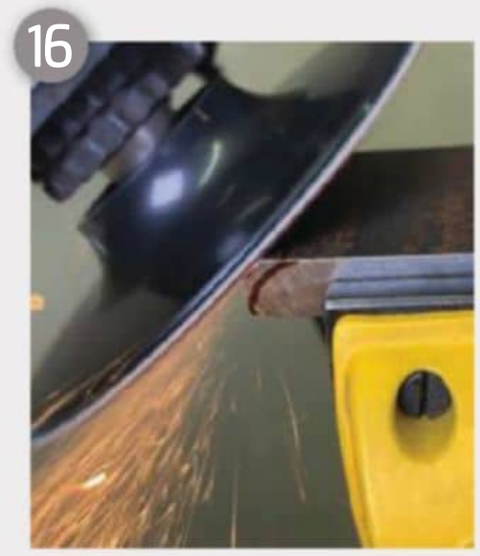
Step 14: **Some testing and insights**

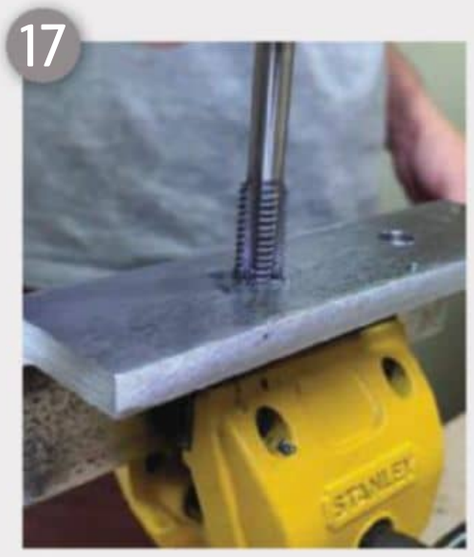
This vice has enough holding power to hold not only square parts. The metal strip or round pipe makes no issue too. What I like a lot is that this vice is low profile, wide, and quite heavy and it could be used for all kinds of applications around the workshop. For example, I cut a metal strip without clamping the vice onto the workbench. During the cut, the vice moved just a hair, which saves me time instead of clamping it.

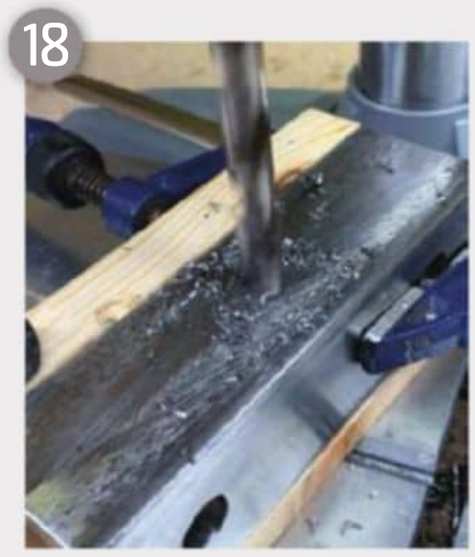
Yes, I'm hearing you shouting – why make such a thing if you could buy it for a decent price? Well, the reason is the same as with all other homemade tools – you use what you have, make it to fit your specific needs (including shape, size, and technical characteristics) and what is most important – enjoy building it.

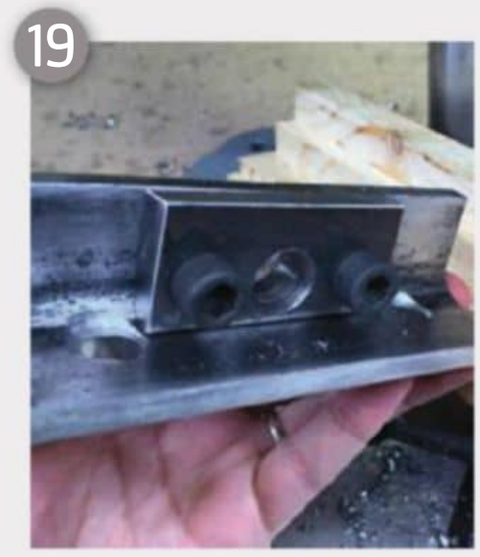


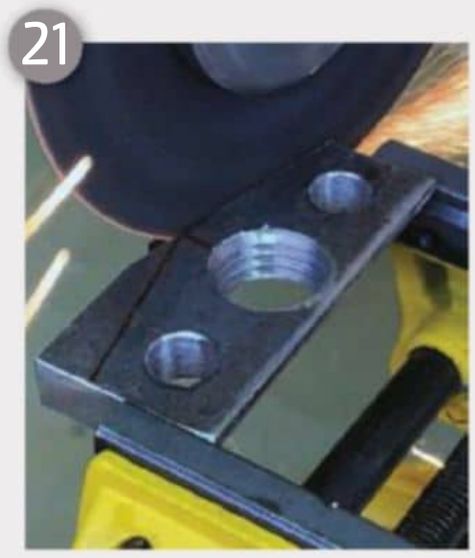


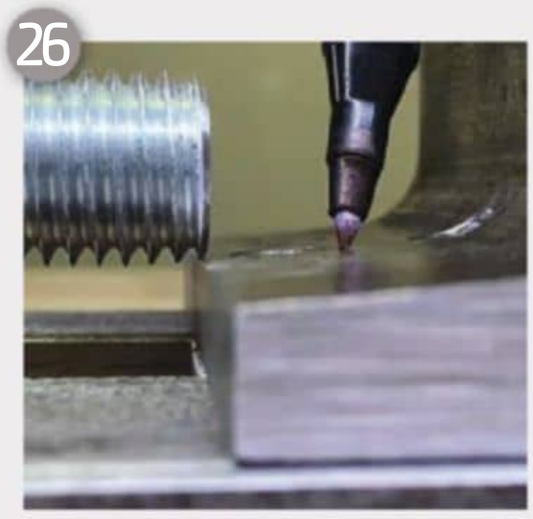


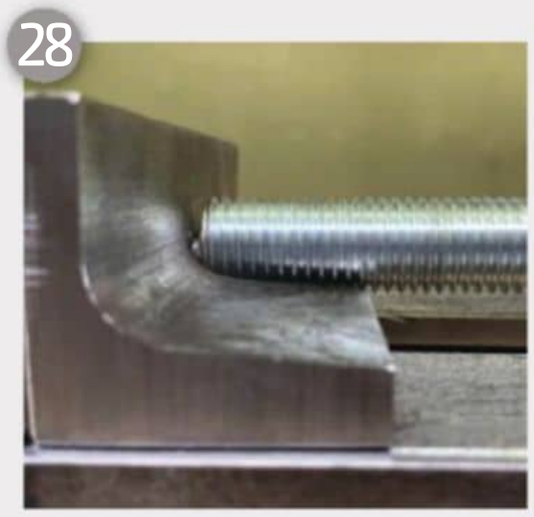


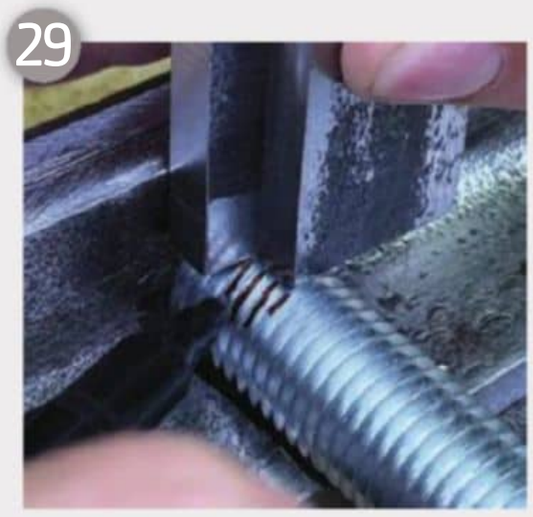


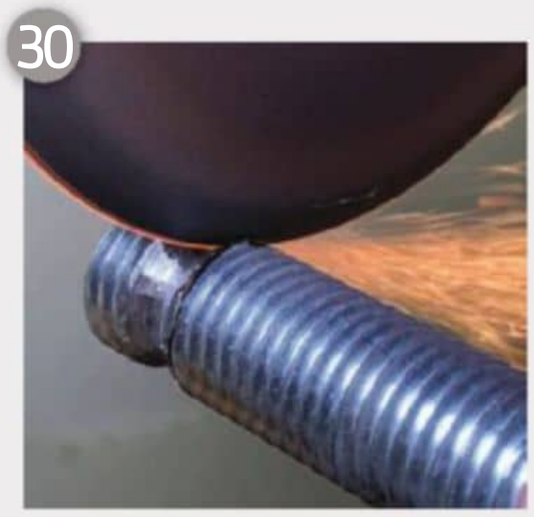


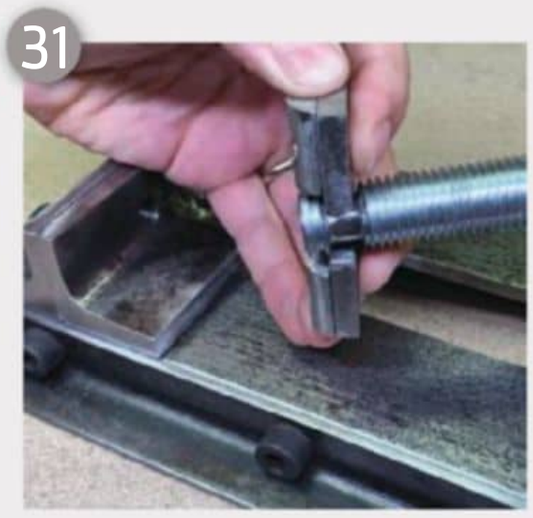


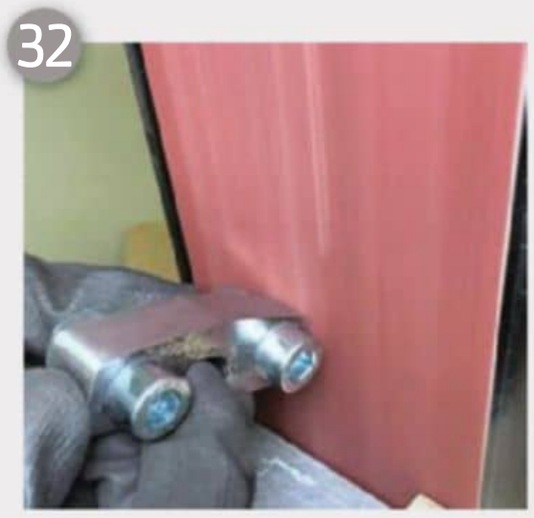


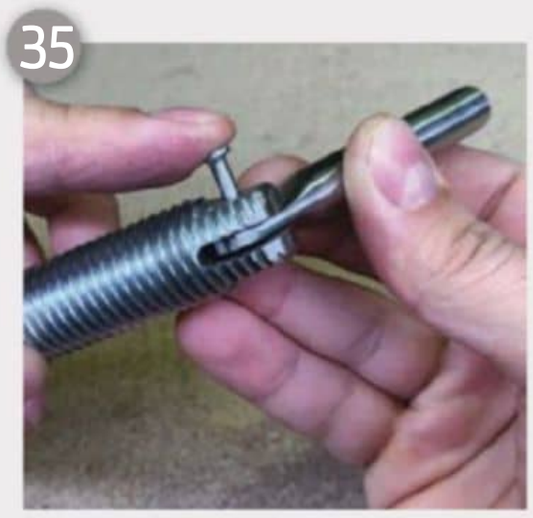


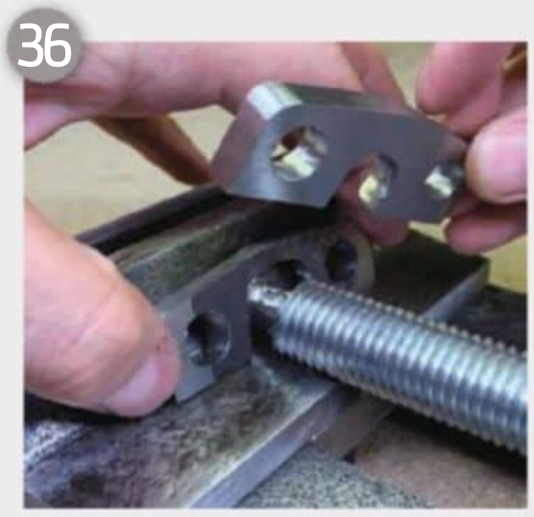


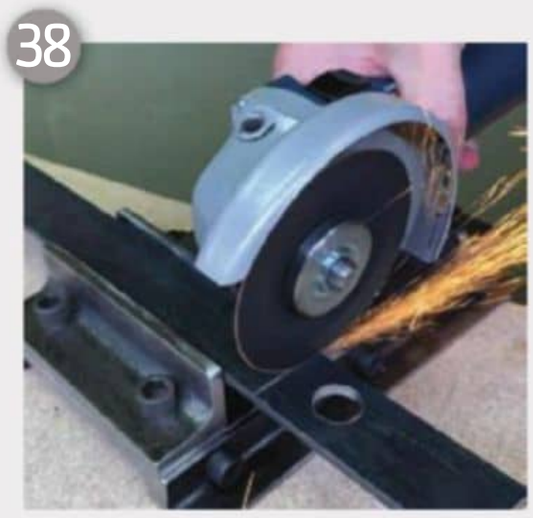












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It's lightweight, cost-effective and the perfect way not only to complete a construction but to decorate your home. It goes by the name of drywall but also as wall board, gypsum board or sheetrock. But how much do we really know about this product? In order to make your next drywall project easier, we fill in the blanks you may have with some basic information about drywall.

FREQUENTLY ASKED QUESTIONS ABOUT DRYWALL

If you are getting ready to add drywall to your home or any other property, you may have a few questions. To help you better understand the topic of drywall, we have assembled a quick questions and answers section below.

What is drywall?

The term 'drywall' is used to describe panels of gypsum board which are used in a wide variety of commercial and residential buildings. As there is no water used in the installation of this product, the name drywall is rather appropriate. This is one of the most common modern construction materials, and there is a good chance the room you are sitting in right now features drywall.

When was drywall created?

This product has a long history in the construction world. Now dating back more than 100 years, drywall first became available in 1916. It did not take long for drywall to become extremely common in homes all across the country. In fact, as quickly as 1945, this was a product which was being used in an incredible number of construction projects.

What the advantages of drywall construction?

There are many reasons why so many builders choose to use drywall in their projects. Among the biggest contributing factors to the popularity of this product include its affordable price tag, ease of repair, fire resistance, and durability. Also, drywall does a great job of mitigating noise, and it can be used in a wide range of settings. Overall, it is difficult to find anything bad to say about this material.

What is gypsum board?

As mentioned above, drywall is technically gypsum board. So, what does that mean? Gypsum board is gypsum rock layered with a special paper to create a final product. This is a rock which is naturally-occurring and can be found in sedimentary rock formations.

Can drywall be installed as a DIY project?

It is possible to install drywall on a DIY basis. You will not need very many specialised tools to handle the project, and if you are comfortable with basic carpentry skills, you may be able to do an acceptable job. However, professional drywall

installers have skills which they have developed over years and many, many projects. If you are having a large room, or an entire home, drywalled, you will be better off leaving the work to the professionals. You want to make sure the work is done correctly the first time, and you may not be able to handle the various techniques needed to complete a large project.

What are the stages of drywall installation or repair?

In either case, the first step would be removing the old drywall if necessary, and then measuring, cutting and installing the new drywall. Once the drywall is on the frame, a taper will start applying the compound, taping and sanding. The first coat of mud will take about a day to dry. Then they will come back to your house the next day to repeat that process, and then the next day until there is enough compound to sand down to a perfectly smooth finish.

How long will it take?

The time it will take will depend on the scope of your project. Installing drywall in an unfinished room will obviously take a lot more time than patching up a section a damaged wall. For a full remodel, the drywall process can take a week or more. Remember that the drywall mud will have to dry overnight and the contractor will have to return to your property for several days to complete the task.

Who supplies the materials?

Most suppliers will supply all the drywall materials required for your project. They will also come equipped with the proper tools, supplies and safety equipment to do the job effective, efficiently and safely.

What do I do about clean-up?

You do not need to worry about renting a dumpster or taking care of the clean-up, the drywall contractors will haul away all unused materials and debris for you. They will also make sure that the area is cleaned up properly by vacuuming excess drywall dust and properly disposing of any waste.

Can I repair my drywall damage myself?

In some cases, a DIY'er could repair minor drywall damage themselves. Small holes or cracks can be repaired using supplies from the local building supply store. However, if the damage requires a large patch or is extensive, it is recommended that you hire a drywall contractor. Without the knowledge and expertise, you could be left with noticeable seams or bumps along the wall.

A professional drywall contractor will give you a smooth and seamless finish every time.

Drywall does a great job of mitigating noise, and it can be used in a wide range of settings

Plant stand FOR THE BALCONY

>> Anna-Lisa Reppo

I made this plant stand using only a drill, brush and drill, but it is even doable without using any power tools. This project is perfect for a beginner woodworker.

What you will need

Supplies:

- 2 pieces of 625 x 170mm laminated timber
- 2 pieces 170 x 170mm laminated timber
- 1 piece 170 x 590mm laminated timber
- Wood glue
- Screws
- Wooden sticks with a diameter of 10mm, 200mm
- Oil or stain for the finishing (must be suitable for outdoor use)

Tools:

- Drill
- Brush
- Japanese saw

Step-by-step guide

Step 1: Installing the sides

Cut yourself or ask at the wood department for the wood to be cut to the sizes shown in the 'What you will need' box. Attach all sides and install them with the screws using the drill.

Step 2: Carving the joineries

Mark the centre of the wooden stick and draw the lines where you have to carve. Use a Japanese saw and a chisel to do this. Sand all the surfaces so it feels nice and smooth.

Step 3: Building the legs

Glue and attach the feet to each other and leave it under pressure to dry. Meanwhile, sand the box.

Step 4: Installing the legs

Glue the legs to the box, leave 80mm of space on both sides. Now attach the screws using the drill and let it dry.

Step 5: Finishing

Once more give some love with the sandpaper, clean the dust carefully and cover the plant stand with oil or a stain.

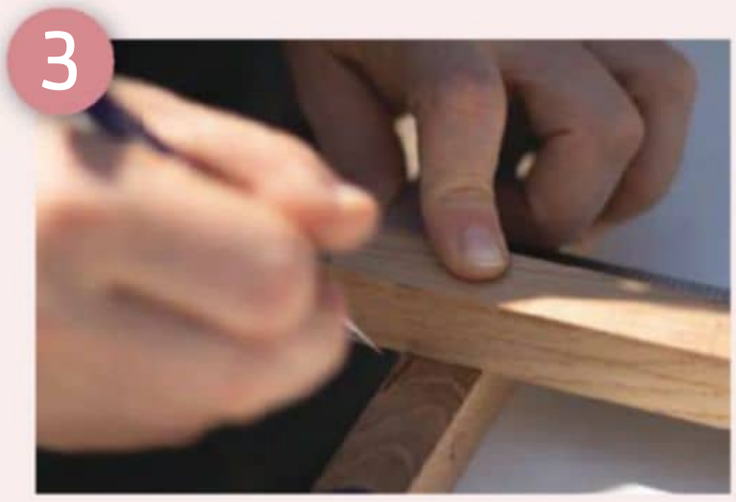
1

Drill a pilot hole

2

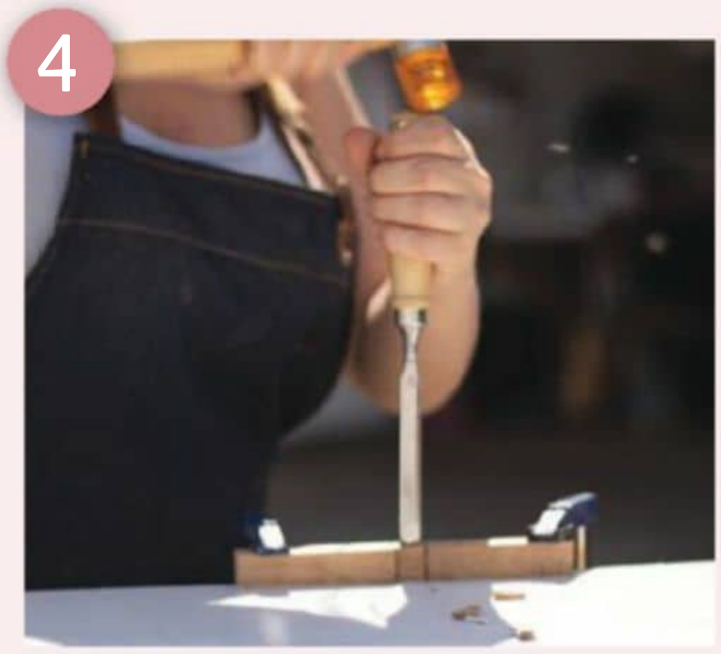
Attach with screws

3



Mark the centre of the wooden stick

4

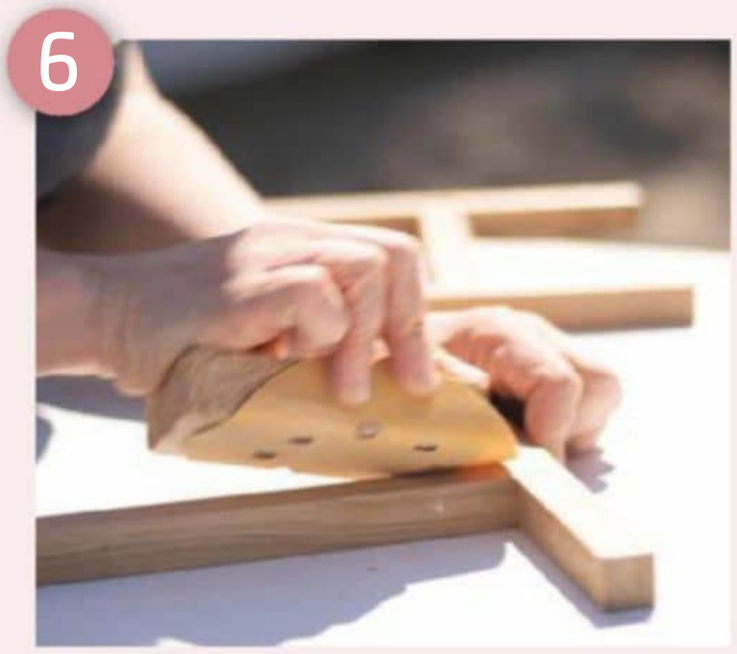


Cut out with a chisel

5

Glue and attach the legs

6

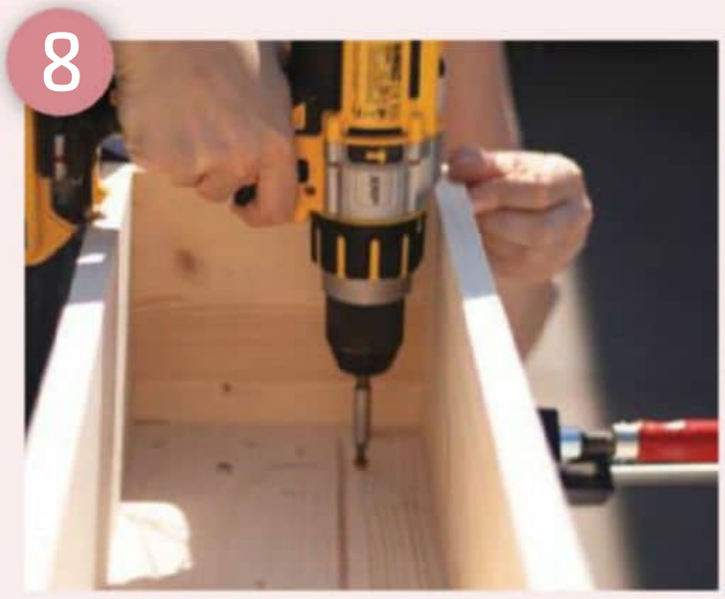


Sand the legs

7

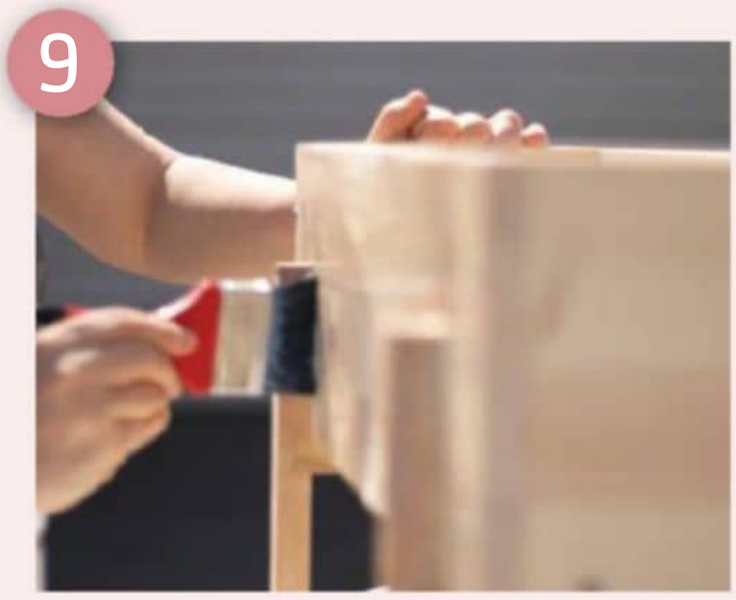
Sand the box

8

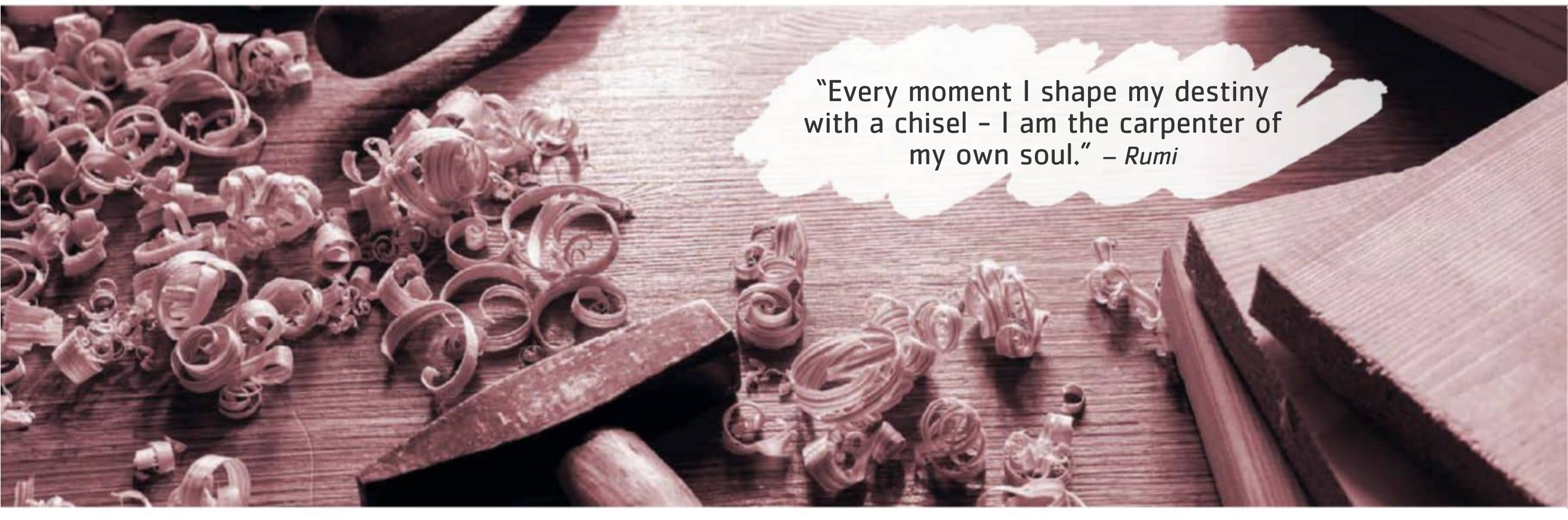


Install the legs

9



Apply a finish of your choice



South Africans have been experiencing the worst year of rolling blackouts so far in 2023, and with loadshedding often comes power surges that can damage electrical equipment.

LOADSHEDDING DESTROYS DEVICES AND APPLIANCES — HERE'S HOW TO PROTECT THEM

Dialdirect head Anneli Retief says that claims relating to loadshedding-induced power surges have doubled since 2018, meaning it might be wise to protect your devices and appliances from the power spikes.

When power is restored after loadshedding, a rush of electricity exceeding the typical voltage supplied to households can occur. Any device connected to mains power at the time is at risk of being irreversibly damaged.

However, there are several interventions that homeowners can make to protect their appliances and devices from power surges.

These include disconnecting devices from mains power during power cuts, investing in DB board surge protectors, replacing plugs with surge-protecting variants, and connecting devices and appliances to surge-protecting strips.

More details on each form of intervention are provided below.

Disconnect devices and appliances

According to Dialdirect, switching off appliances like fridges and air conditioners during loadshedding can help protect them from power surges when electricity is restored.

The insurer advises that owners wait for the power supply to stabilise by waiting for lights to stop flickering or dimming before switching on the appliances one by one. Completely unplugging appliances that can be is the safest option.

Furthermore, having devices disconnected from the mains when power is restored puts less pressure on the power grid, making damage to municipal and Eskom infrastructure less likely.

High power demand when electricity is restored puts immense pressure on electrical infrastructure like transformers and mini-substations, which can often result in further electrical faults.

This, in turn, causes prolonged outages as Eskom or municipal staff must repair the fault for power to be restored to the area served by the blown transformer.

With the loadshedding South Africa has experienced over the past two years, these faults are becoming increasingly common to the point that Eskom warned that it could run out of spares to repair them.

In July 2022, the power utility published a statement warning South Africans that it had limited stock levels to replace blown transformers and repair mini-substations.

At the time, it said it had replaced or repaired 116 damaged substations and 1,326 transformers, costing the power utility R152 million.

Surge protectors and strips

South Africans can buy surge protectors

for their DB board or surge-protecting rewirable plugs and power strips from various hardware stores and online retailers.

When power levels spike above a certain threshold, surge protectors reroute excess energy into their grounding wire, preventing it from reaching your appliances or devices. They can also help protect devices if the voltage drops below safe thresholds.

DB board surge protectors should be installed by a certified electrician.

However, those looking for a solution with less hassle can opt for surge-protecting rewirable plugs or power strips.

These essentially divert excess electricity in the same way but merely need to be the link between your mains power outlet and your appliances to provide protection.

Several DB board surge protectors and surge-protecting rewirable plugs and strips, along with their pricing, are listed in the table below.

Surge protector pricing

Product	Price
DB BOARD SURGE PROTECTORS	
Leeyee 4-20mA Surge Protector	R199
CBI Surge Protection Breaker	R340
Leeyee AC Surge protector 275V 40kA 2P	R449
Feed Modular Surge Protector 220V Single Phase	R499
Leeyee AC Surge Protector 275V 40kA 4P	R699
SURGE-PROTECTING REWIRABLE PLUGS	
Ellies High Surge Protection Plug	R99
Clearline Dedicated Lightning & Surge Protector Plug	R136
ACDC 15A Surge Protection Plug	R149
Snappy Chef Surge Protector Plug	R179
United Electrical 16A High Surge Protection 3-Pin Plug	R179
SURGE-PROTECTING POWER STRIPS	
Nexus Multi-Plug: 3 x 16A; 3 x 5A with surge protection	R249
Africa Surge Wonder Protected 4x3pin and 4x2pin	R319
Clearline Loadshedding 4/4 Surge Protection Multiplug	R497
Ellies High Surge Protection 4 Way Multi-plug + 3m extension	R579
Ellies 8 Way MultiPlug with Surge Protection	R769

It should be noted that the surge-protecting plugs listed above also require some work in the form of rewiring appliances to set up. However, this is relatively straightforward.

While DB board surge protectors and surge-protecting power strips are more expensive than surge-protecting plugs, they simultaneously provide surge protection for multiple appliances and devices.

On the other hand, rewirable plugs only protect the device to which they are wired.

Uninterruptible power supply (UPS)

UPSes also allow users the time needed to safely shut their devices off or continue working after loadshedding has kicked in.

They also regulate the amount of power connected devices and appliances receive — essentially a form of surge protection.

UPSes come in varying sizes and use batteries to keep your devices running without interruption when the power goes off. They also provide users time to save their work if the power goes out while they are busy. The size of the UPS needed to run devices depends on the unit's capacity and the load which connected devices and appliances put on the UPS.

Tips for being prepared for loadshedding

- Know your loadshedding schedule and plan your activities around it.
- Consider getting rechargeable lights.
- Keep your rechargeable lights well charged.
- If you have a cellphone, keep it well charged.
- If you have a laptop, keep it well charged.
- Consider getting a rechargeable power supply for your computer and internet.
- Keep a torch and fresh batteries nearby.
- Keep a candle and matches nearby.
- Consider getting a gas bottle and cooking attachment.
- Keep your gas bottle full.
- Consider getting a backup gas bottle.
- Save your work regularly. Keep a separate backup copy of your documents.
- Boil water and keep it in a thermos flask.
- Keep your fuel tank full. Fuel pumps may not work during a power failure.

Amaze yourself with this build. It is an ideal DIY project for a teen, giving insight into designing a project, laying it out, accurate measuring and precise cutting using a minimum amount of tools.

AMAZE YOURSELF

>> Geoff Hollingdale

Here is a simple project that used to be played by kids before we had phones. It's still popular. Maze games of different types and complexity are available on the web where you can download many variants of the game, building them or printing and using a pencil to get to the exit.

As an exercise for the would-be DIY'er to encourage younger people to get involved with woodworking we will build a small hand-held maze for the younger sister or brother.

A commercial version of Labyrinth – Late 1970's (Courtesy: e-Bay)

As a starting point you need to choose the size of the marble or ball bearing, you're going to use; the steel ball is better, it gives a satisfying "clunk" as it moves about the maze. I chose a 15mm ball bearing which sets the distance between tracks, so in this case allow 17mm. This in turn with simple design we're going to use means we'll be using 17mm sq. stock. I got hold of the 17mm stock (in a hardwood – Meranti) by poking around in a friend's bin of off-cuts, where I found a piece of 20 x 20 and had it reduced to a 17 x 17mm profile. Any material would do, Pine, MDF or even thick corrugated cardboard.

Right, we've got the materials, now we need to decide how big the maze will be and who is going enjoy using it. It's the same when you, for example, decide you're going to build a cabinet – how big and who is the end customer.

Let's assume a child about 5-8; over 8 they will be playing like every other kid does else – on a phone.

A handy portable size for a child would be a unit about the size of an A4 sheet. (210 x 296). Divide the width and breadth of the A4 by 17 and you get 210/17 = 12,25, call it 13; 296/17 = 17,41, call it 18.

Mounting board, made from a scrap piece of 6mm MDF must be cut to 17 x 13 = 221mm; long side is 17 x 18 = 306m.

Safety

Key to enjoying any handiwork where cutting, drilling, and sanding are needed is to think first, act secondly. Using hand tools like saws, box cutters, chisels; power tools, drills and sanders need the use of safety glasses, face masks and if loud and noisy, ear plugs. It's highly recommended, until you get used to handling sharp tools that you wear light protective gloves. To avoid splinters and jagged edges in handling rough, unfinished wood or cutting through metal also requires wearing protective gloves.

If you wear prescription glasses, a pair of wrap-around safety glasses are still essential wear to prevent scratches to your glasses and avoid a wood chip flying into the side of your glasses.

Organising what lengths need to be cut

Depending on the design of the maze you can work out what lengths are needed. There are many ways in which the maze can be designed. In the models of the 70's it was customary to make it more difficult to complete the maze as in a two layered construction holes were drilled in various places allowing the ball to fall through.

Ours is very simple, it consists simply of straight pieces cut from a 17 x 17 mm square section wood. To make life easier with designs like these I started out with a piece of paper divided-up into squares.

The design can then be coloured-in as various block lengths.

You will need to cut:

Block Unit	Actual Length	How Many?
1	17mm	6
2	34mm	5
3	51mm	5
4	68mm	6
5	85mm	3
6	102mm	Nil
7	119mm	1

A few spare blocks are cut to assist in lining-up and positioning while gluing and setting in place.

Key to getting the maze finished correctly is:

1. Cutting and preparing pieces
   - Cut pieces to specific lengths shown;
   - Take a file, rasp or a small, folded piece of sandpaper to 'smooth' the edges of the pieces cut.
2. Gluing
   - Use a thin coating of wood glue, 'butter' over the side to be glued with an ice cream stick – note that wood joints don't become stronger the more glue you use;
   - Use a set square or combination square to align the pieces
   - Use other cut pieces to assist in getting the right spacing
   - Check you've put the right length piece in the right position before the glue hardens.

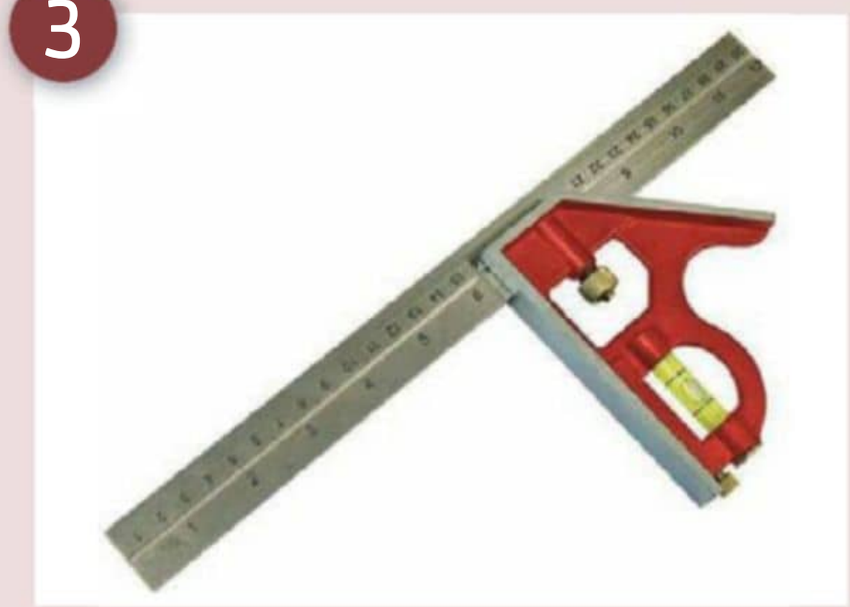
1

The paper layout

2

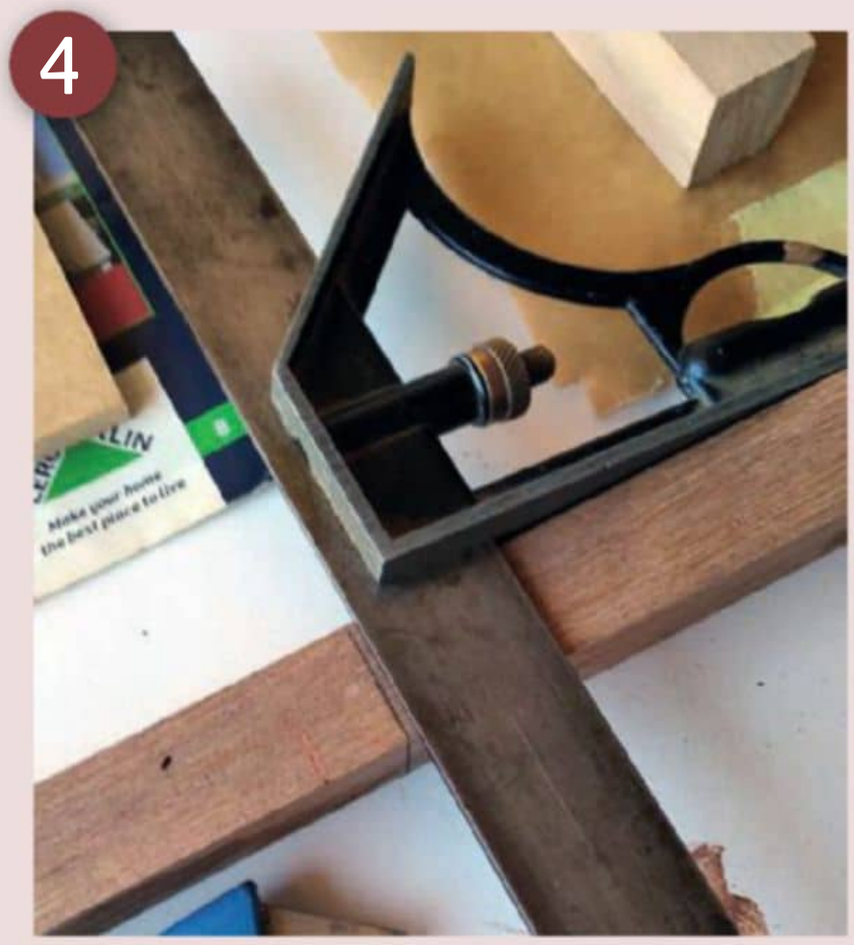
Hacksaw blade Holder with blade fitted teeth facing towards the handle

3



Combination square

4



Scoring the cut lines

5

Cutting with the hacksaw

6

A and B: Spring Clamps

7

In this picture, I'm using the spring clamps to hold the frame in position

Cutting the lengths to size

For small pieces of timber, a very practical low-cost tool is a hacksaw blade mounted in a holder. A suitable blade would be 24 TPI and it's mounted in the holder so that the teeth face backwards, in other words you cut on the backstroke.

Measure the length (twice) on the piece to be cut, mark with a soft but sharp pencil (B) using a Set Square or Combination Square. Use a Retracting Blade Cutting Knife to score across the cut stops "tearing" when you start sawing and gives a clean saw cut.

If you need to cut many pieces to length, measuring once and using the 1st cut piece as a guide for the rest of the pieces avoids measuring errors and the repetitive action of measure and pencil mark. Now it's just score and cut.

Finish the pieces by lightly sandpapering using 120 grade paper. "Break" the wood edges so that when handling the wood there are no sharp edges.

You'll notice in the photo that I'm using a clamp to hold the workpiece. For a budding handyman you'll quickly learn that clamps are an important tool to have to hand. In this instance, a G-clamp is being used.

Assembling the pieces

When joining any items together whether it's a simple project like this or building a more complex project like you might see in this magazine, the important part is getting the pieces to sit 'square' to each other. For example, a shelf erected on a wall doesn't work if the shelf is tilted or hangs other than 'square' to the wall; putting – up a kitchen cupboard and finding that the door hangs skew and won't close is not what you want. So, like anything else you might build we need to cut/glue/join our pieces together in such a way that the individual pieces are not only in the right position but are also aligned at 90 deg. to each other.

We need to ensure that the pieces, having been glued are at 90 deg. and not skew. Otherwise, the fitting of the pieces to be able to line-up and allow the ball to move around won't happen and its then a question of yelling and remorse then starting over!

It's at this stage, as with lots of jobs in woodworking, that you need help from an extra "pair of hands". It's time to introduce two low-cost clamps.

One-handed clamps: This class of device is designed for convenience more than powerful compression. Spring and Bar clamps are tightened by squeezing the handles, which also gives you a feel for how much pressure is being exerted on the workpiece.

Spring clamps: Like oversize bulldog clips, these are about as simple as clamps get. They comprise a pair of spring-loaded metal or plastic handles that pivot to open the jaws when squeezed together.

They are best for small workpieces and use spring tension to exert force. Some are designed with adjustable jaws.

Bar clamps: The ultimate all-rounder, bar clamps are fast and easy to use, grip tightly and usually have large jaw faces with buffers that won't damage the timber. They are operated by squeezing the handle to

advance the bar with a fixed jaw at the end. A smaller trigger catch can be pressed to release the bar and let it slide freely.

Some models even feature an interlocking function that allows them to be used as a temporary vice.

In this view the bar clamp is being used together with a piece of MDF cut as a square and originally used for lining-up frames when picture framing to line-up pieces both vertically and horizontally. When the last piece has been positioned and glued, clean out the dust from the maze with a small paint brush.

Using the steel ball bearing, do a test run and make sure the ball can run easily through the maze without getting stuck somewhere. If it gets stuck, the easiest solution is to start over…

The last step in assembling the maze is to sand down the blocks and seal the assembly with either a clear sealant spray or better still Woodoc 5 sealer.

Now we are ready to fit an acrylic cover. 2mm or 3mm thick clear acrylic is ideal for the job.

A number of outlets catering for people working with acrylic sheeting often carry an off-cuts bin. So, while they will cut you an itty-bit from a large sheet, you might find a piece big enough for this project.

Acrylic is like working with thin glass, with thin glass doing it yourself can end-up with lots of broken/cracked glass, but once you get practice in glass cutting its easy-peasy. So, with acrylic rather pay a little extra and get the shop to cut the piece to size.

Clear or find an area where you can work with the acrylic. The acrylic is covered with protective sheeting; don't remove it!

Attach small pieces of double-sided sticky tape somewhere about the centre of each edge. Position the acrylic sheet so that it looks and feels centered on the maze sides.

Mark a point approximately at the centre of each side, inset by 8mm. Use the tip of the cutting knife to make clear the drill point at which we drill the holes. Find a sharp 3mm drill and secure into an electric drill. Briefly start the drill and see if the drill spins around without a wobble. Loosen and reset the drill in the chuck and check again. Position the drill at the marked point. Drill through the acrylic and into the side pieces.

Remove the acrylic sheet. Drill about 5-6 mm into the side pieces where it's been marked. Peel off the protective sheet from the acrylic. I used 3mm x 16mm pan head screws to secure the acrylic sheet.

Now find a suitable test subject to check out the maze. Take care to avoid teens who don't want to be dragged away from 'Power Aliens'. Do try out the project if you want to become competent about doing jobs around the house.

Note: Available by request from *The Home Handyman* is a layout chart for the pattern used in this example.

8

Bar Clamps

9

Aligning and clamping using a bar clamp

DIY pest control and professional pest control both have their pros and cons, and which option is best depends on the severity of the pest problem and the preferences of the individual.

DIY PEST CONTROL VS PROFESSIONAL PEST CONTROL

Life as of late requires one to troubleshoot and "Do It Yourself" through tasks that we would previously call professionals for. Valeant as the effort may be in order to save a penny or two, but is your DIY way the most suitable to get the best results?

When it comes to pest control, most grab an aerosol that promises to get rid of any cockroach, ant, fly, mosquito, etc., in sight. Walking into the shops to purchase such products is easy enough, but are they giving you the same calibre of results you would get if you hired a professional pest control company to do the job? good question. Store-bought pest eradication products only address the symptoms and not the cause or source. When you see a cockroach, you spray them, and they die right? What about their family hiding behind the fridge, in the oven, around the geyser, and in cupboards? The root of the infestation has not been addressed and eliminated.

With their fast reproduction rate of just 36 days from baby cockroach to adult, using aerosols is a fleeting effort. Did you know: Pests later build immunity to these products which means they are able to survive even though you have been trying your best to eliminate every single one in sight? The reality is, DIY methods may not be as effective in controlling more severe infestations or for dealing with pests that require specialised equipment or expertise to handle.

Professional pest control, on the other hand, takes into consideration the type of pest, the root of the infestation, and subsequent prevention measures to ensure that the pests stay away. Professional products have specialised active ingredients which target specific pests and their level of immunity. As well as monitoring the site after administering the products, professionals also return for follow-ups after the service has been rendered.

They take into account the type of site (home/office/warehouse/soil/foundation), size and location that requires pest control. Different sites need different methods. This means that there are a variety of methods and different product concentrations that are suitable for different sites. It's not just a spray-and-pray-away endeavour. Professional pest controllers take time to assess the infestation and find the root of it all to ensure that it doesn't happen again. Professional pest control is a holistic service that covers every angle and behaviour of the pests and eradicates them thereafter.

What makes your home attractive to pests?

If you're passionate about being pest-free, put washing dishes on the top of your to-do list. Leftover food on dishes is one of the major causes of insect and pest infestations. Unwashed dishes offer the perfect combination of moisture and food to hungry pests. When it comes to preventing pests in your home, taking care of leaks as quickly as possible, is something that most homeowners don't think to do. Here are some of the things that make your home attractive to pests:

- **Moisture and warmth:** Think about it, we need water in our everyday lives and so do pests. Water that has soaked into wood is attractive to termites. Piles of paper that are rarely touched can be a big draw for silverfish and even cockroaches, likewise excess water and moisture in and around your home, creates a haven for a variety of pests. Moisture as a result of leakages in your home, doesn't only cause damages to structures, but also invites various household pests such as cockroaches, rats, and water bugs.
- **Clutter and paper:** Paper and clutter are some of the worst offenders for attracting pests. To avoid pests, there are effective steps to organise, store, and get rid of your paper clutter for good. Shred personal documents to maintain a pest-free home. Recycle your stacks of magazines and newspapers to keep your home clean and pest free. It is ideal to remove clutter from your house and clean your property regularly to avoid a myriad of pest issues.
- **Spilled food:** Bugs can't resist a little bit of the mess. Spilled food crumbs contain a veritable feast for insects, such as cockroaches and ants. Regular clean-ups that include moving and vacuuming behind the stove and refrigerator, help make your kitchen a whole lot less palatable to pests.

Who's responsible for pest control in a rental property?

If you're a tenant or a landlord, you'll be all too familiar with the tug of wars that arise over issues with the property at hand. Many people enter into a lease agreement unaware of who's responsible for what, only to end up at a stalemate.

Know your rights. Without being aware of the facts, it's impossible to successfully (and congenially) address pest control in a rental property

Most residential lease agreements don't mention anything about pest control. As far as commercial property is concerned, pest control is the sole responsibility of the landlord, unless stated otherwise. Unless explicitly stated in the rental agreement of a residential property, the onus falls on both the tenant and landlord to deal with any pest control issues that may arise. That said, the responsibility of securing treatment depends on the nature of the pests.

Infestations that occur due to an unhygienic environment are the responsibility of the tenant

Ants, cockroaches or rat infestations that occur after the tenant has moved in must be dealt with by the occupants. Open bins and a laisse faire approach to cleanliness are beacons for pests, which means that it is the tenant's responsibility to ensure that they maintain a clean and hygienic environment in order to avoid any unwelcome guests. If there's an existing infestation upon occupancy, the landlord will need to be notified immediately in order to deal with the problem, as well as avoid any tiresome 'he said, she said'. Taking photos that indicate the date is advisable when attempting to tackle any existing pest control problems in a newly occupied residence.

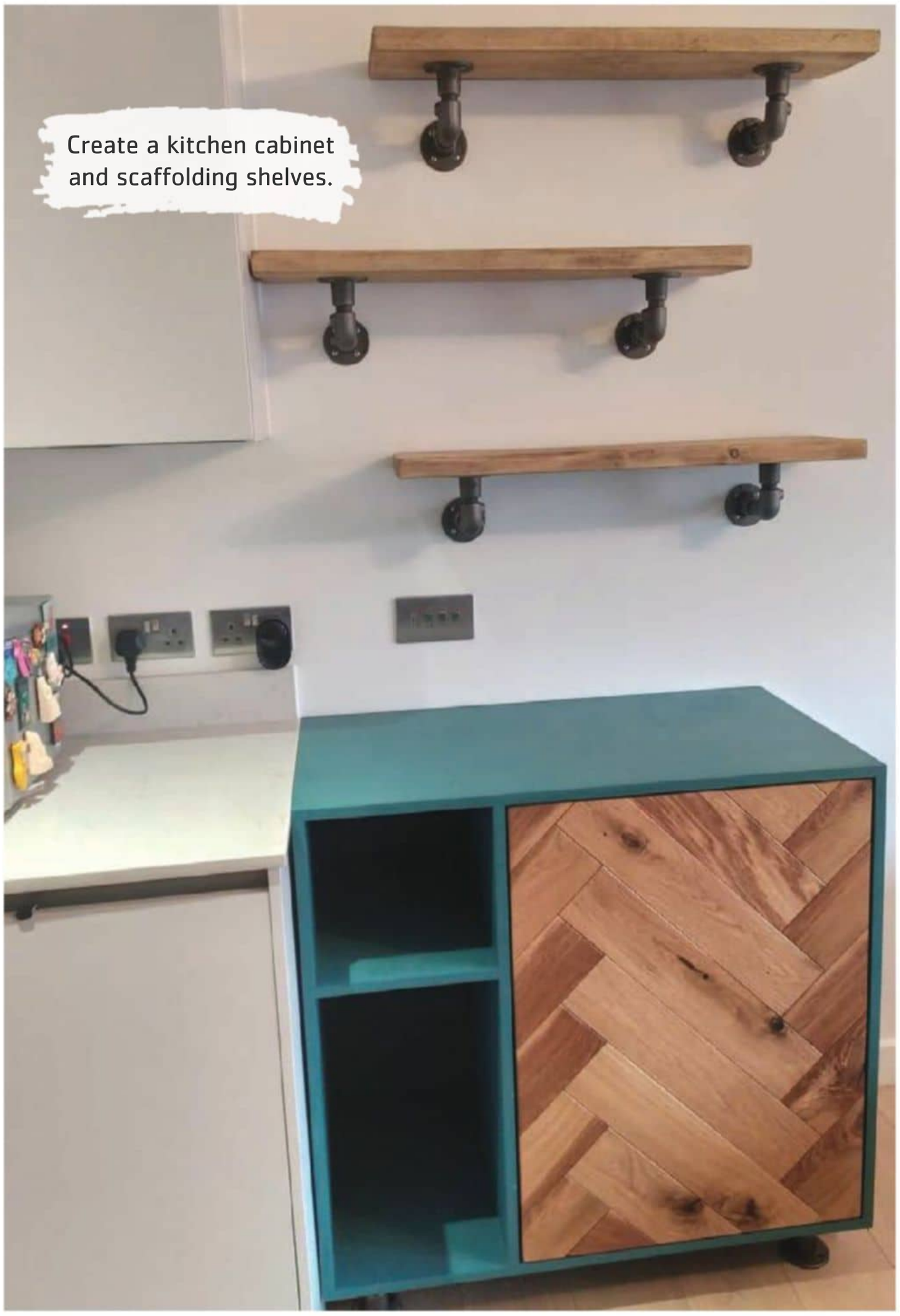
Pests that can potentially cause damage to the property become the landlord's responsibility

Termites and other wood boring beetles are often historical problems – of which neither party may be aware of when the property is leased. If a tenant discovers any wood rot or signs of destructive pests, they need to notify the landlord immediately. Once the landlord is notified, the task of ridding the property of any infestations falls on them. Failure to alert the landlord about wood borers or the like can result in legal action being taken against the tenant.

Pest control in a rental property is best left to the professionals

DIY methods may get rid of rampant rodents or annoying ants for the short term, but sooner than later, you'll be faced with the pests again. It's far more effective (and affordable) to contact a pest control specialist who'll inspect the property and advise on the best course of treatment for long-term pest control.

For more information, visit www.thespecialists.co.za



COSY KITCHEN CREATION

What you will need

- Single sheet of 2400mm x 1200mm x 18mm plywood
- 900mm x 600mm x 9mm plywood
- Oak plank
- Undercoat
- Paint
- Wood glue
- Scaffolding board
- Scaffolding pipe
- 390 degree scaffold elbow
- 2 scaffold wall plates
- Dark oak wax

I was asked by a colleague if I could make her a kitchen cabinet which matched a sideboard I'd made her before with three scaffold shelves. The main body of the cabinet was made from plywood, which was painted, and the door from plywood covered with thin oak strips in a herringbone pattern.

The shelving is made from scaffolding tube and scaffolding board.

Step-by-step guide

Step 1: **Design**

I started by creating a 2D drawing so I had a nice drawing to reference off and to layout the oak panels. The cupboard was to be split in to two sections where the left-hand side was open and had a shelf two thirds of the way up and the right-hand side had a door and two adjustable shelves.

Step 2: **Prepping the plywood**

My workshop isn't really big enough to cut a while board of ply so I cut to rough dimensions outside with a track saw. Once they were cut into manageable sections I brought them in to the workshop and cut them to their final size.

Using a handheld router I add a groove to the back of the main body pieces to accommodate a floating 3mm plywood back board making sure that I stopped before the end of the top and bottom pieces so the groove wouldn't be visible in the final cabinet.

As I was going to use pocket hole screws to fix the cabinet together I added lines of three holes to the areas that would be least noticeable. So, I added them to the underside and vertical parts of the cabinets.

Step 3: **Glue, screw and clamp main cabinet**

To help everything to stay at 90 degrees during the glue up I used a few 90 degree clamps at the corners. I started by assembling the carcass without the glue so the screws had holes to go in to during the glue up.

Once I was happy with the squareness of all the joints I

disassembled the whole cabinet, added glue to the joints, added the back panel and glued, screwed and clamped the cabinet.

Step 4: **Making the door**

As the cabinet glue was setting, I went on to the door. I started off by cutting a piece of plywood down to size minus 10mm on each side, as I wanted to add an oak trim around the edge. I didn't get an photos of the edging but I just cut mitres on the end of the oak strips and glued then in to place, holding them on with masking tape.

To make the herringbone oak patterns I started off my re-sawing some oak planks on the bandsaw and used a thicknesser (planer) to bring them all to the same thickness (around 7mm).

I laid out the oak on the door board, starting off with the whole pieces in the middle and went on to cutting the edge pieces. I centred the middle parts so all the edge pieces were exactly the same. Once they were all cut to size, I used a router to add a chamfer to all the internal edges.

I glued on the pieces in parts, started on one edge, clamping and leaving for an hour or two. Then went on the remaining edge pieces, making sure that the middle pieces would still fit, glued and clamped until only the central pieces needed to be fixed.

As the clamps only reached the edges, I used some bit of wood to span the width of the door and clamped them so all the wood would have some pressure applied to it.

Once everything was dry, I sanded with a random orbital sander to 180 grit and oiled the wood.

Step 5: **Prep and paint the cupboard**

Prior to painting I prepared the edges of the plywood and any small steps in the joints by adding a smoothing filler (spackle). This would block the laminated wood stipes on the cut edges on the face of the cabinet and make the whole cabinet uniform. I also filled the pocket hole screw holes with a wood filler.

Once dried I sanded back, added a bit more filler in places that needed it, wait for it to dry and sand back again. Once the surface was uniform all over, I painted the whole cabinet with a priming coat.

Once the primer was dry, I painted the whole cabinet with wood furniture paint. In the end I added at least three coats overall and a couple more on the top and face joints.

After I was happy with the paint, I added two coats of dead flat varnish to the cupboard for a bit more of a hard waring surface.

Step 6: **Make the feet**

The feet were made from quick fit scaffolding, where the scaffolding tubes are held into fittings with grub screws tightened with an Allen key. This makes everything very quick and simple.

All I needed to do was to cut 4 x 100mm lengths of scaffolding tube with an angle grinder, fitted with a thin metal cutting disc, and fit and tighten the tubes in to two wall plate fittings.

As the tube doesn't need to be flush to the bottom of the fittings the lengths can be adjusted to compensate for uneven floors.

Step 7: **Hanging the door**

To hang the doors, I used soft close inset door hinges I got from Amazon. I started by marking the position of the hinges on the back of the door and cut the hole to accommodate the hinge on the drill press, using a fence for stability and repeatability. Once I had fit the hinges on the door, I offered it up to the cabinet to establish the screw positions. I then removed the hinges from the door and screwed them to the cabinet.

I then added a spring-loaded door latch which not only made the door handle free but also acted as a stop so the door hung flush to the cabinet face.

Once hung I adjusted the hinges so the doors hung with a constant gap all round and flush to the cabinet face.

Step 8: **Making the shelves**

The shelves were pretty simple. I cut a couple of plywood pieces to size, painted and routed four grooves to the edges to accommodate peg shelf supports. I then made a drill hole jig so all my peg support holes would be the same distance from the bottom of the cabinet. I only had to make sure the jig was then square and at the correct position before drilling all the holes.

Step 9: **Scaffolding shelving**

The scaffolding shelves are made from scaffold boards and the same scaffolding as the feet.

To make the scaffold frame I used two lots of two wall plates, one 90 degree elbow and two lengths of scaffolding bar per shelf. I started by determining the lengths of bar I needed and cut them with an angle grinder. Once cut I assembled all the parts.

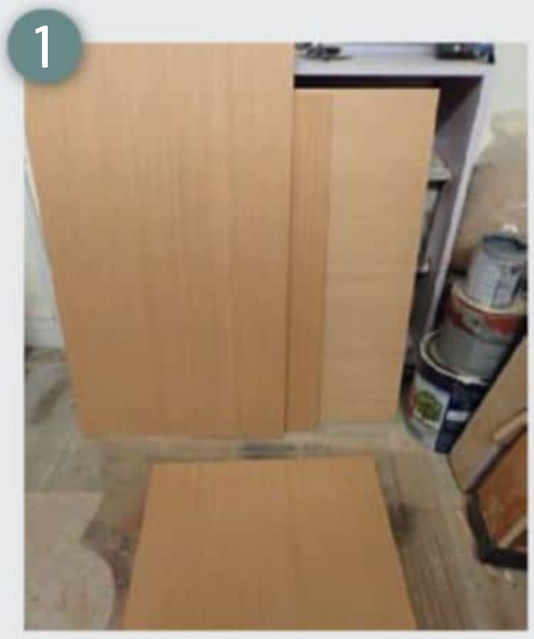
For the boards I wanted them to be fairly rustic, so I sanded them with a belt sander to 80 grit and then finished up with 180 grit. They don't need to be completely flat or blemish free though so didn't take too long.

Once sanded I applied a coat of medium oak wax polish.

Step 10: **Finished**

I took the cabinet and shelving to my friend's house and installed the shelves on the wall in an offset pattern so the top shelf wasn't too high and a tall object could be put on the middle shelf.

I didn't need to adjust the leg height as the top ended up being exactly the same height as the rest of the kitchen cabinets. Had they not been the same it would have been easy enough to make adjustments to the legs.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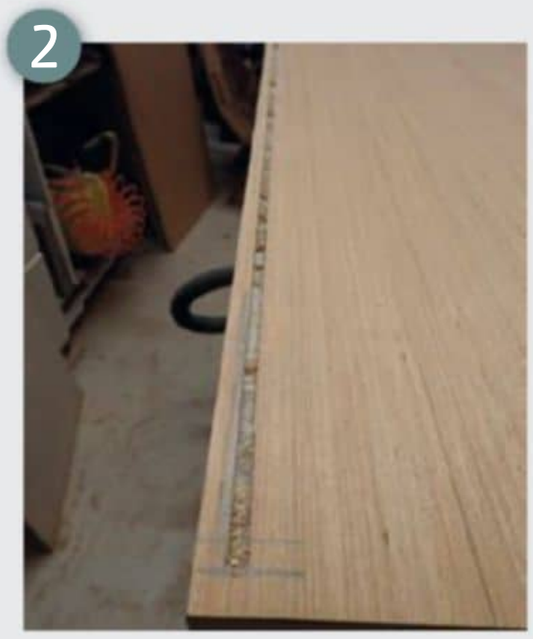
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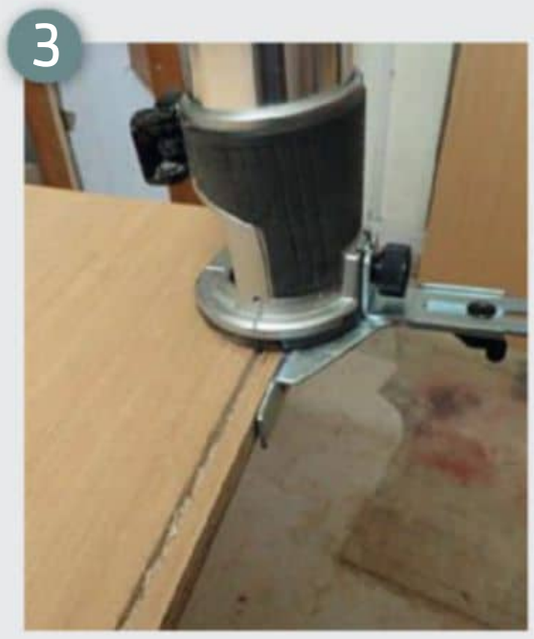
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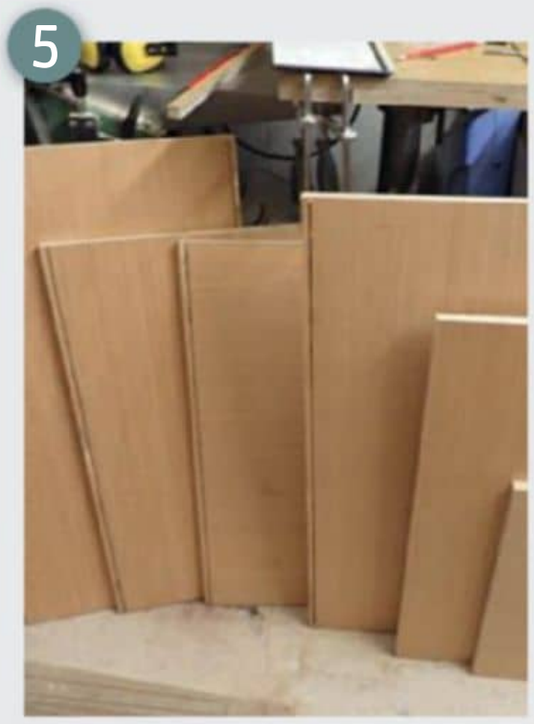
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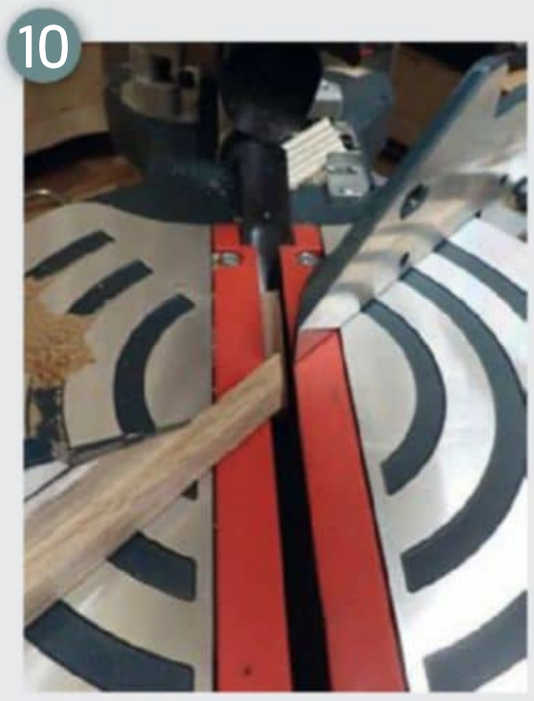
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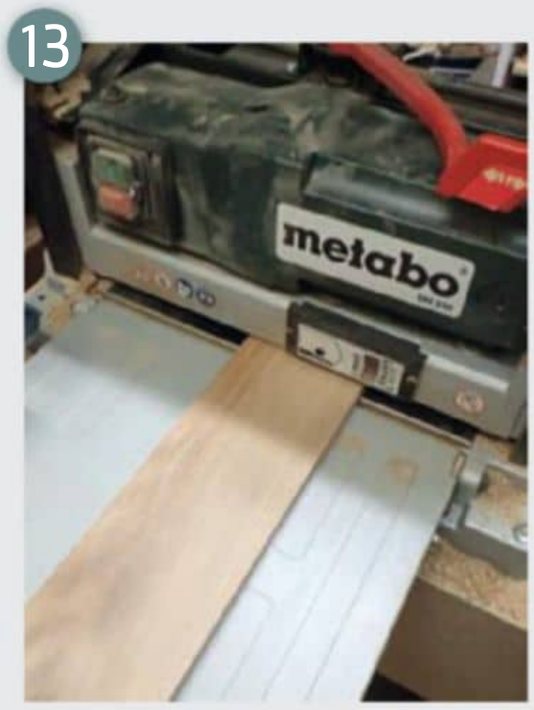
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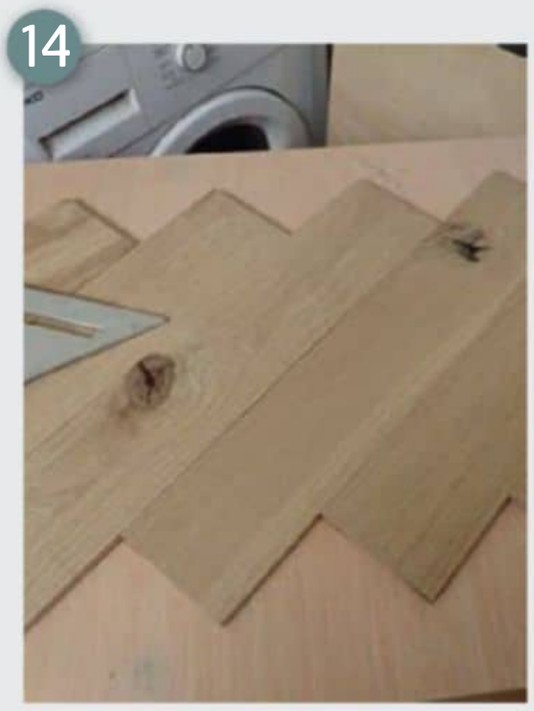
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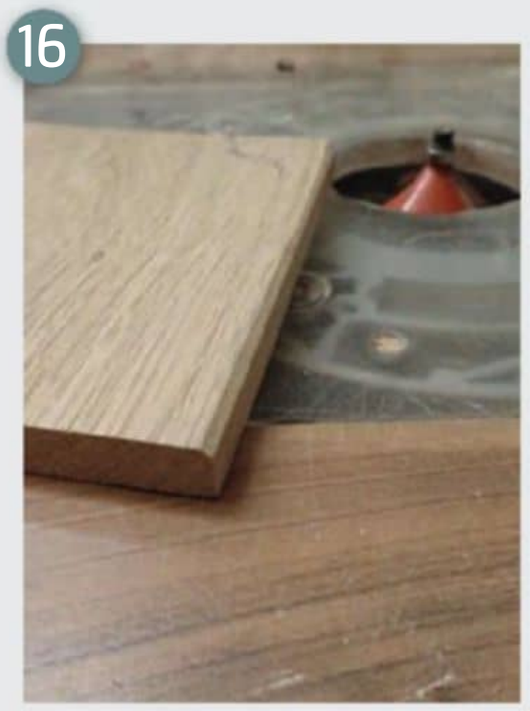
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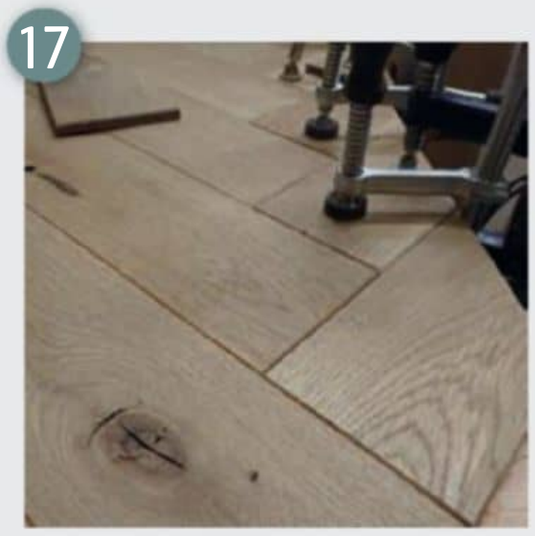
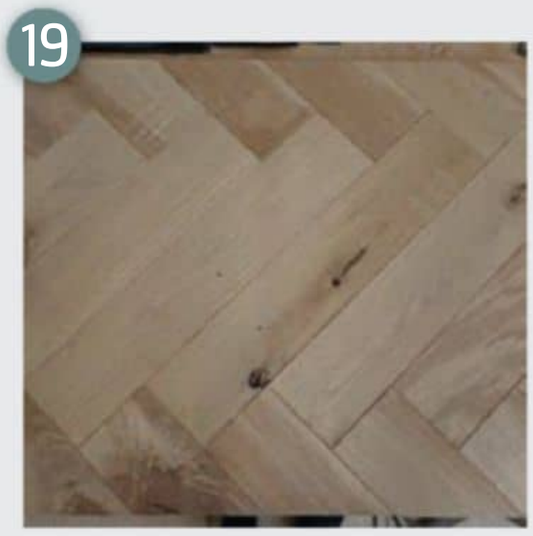
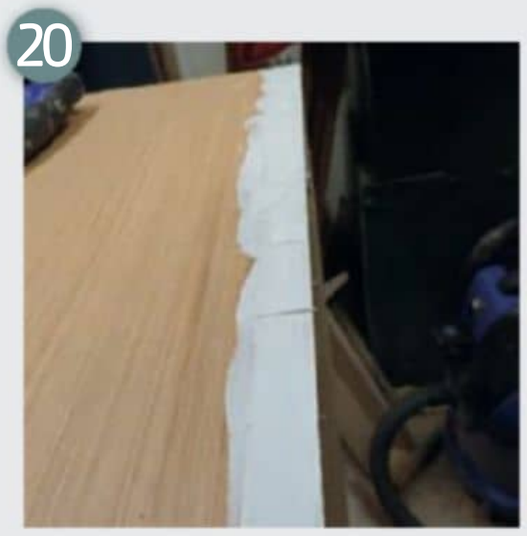
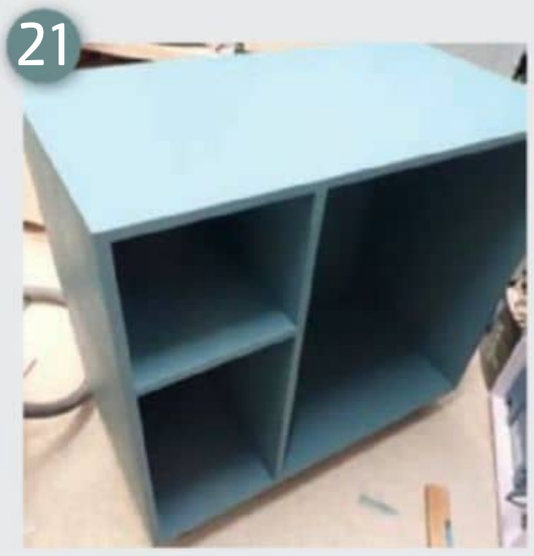
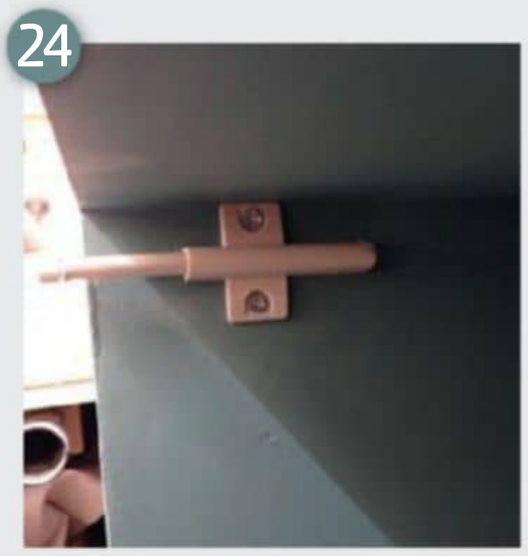
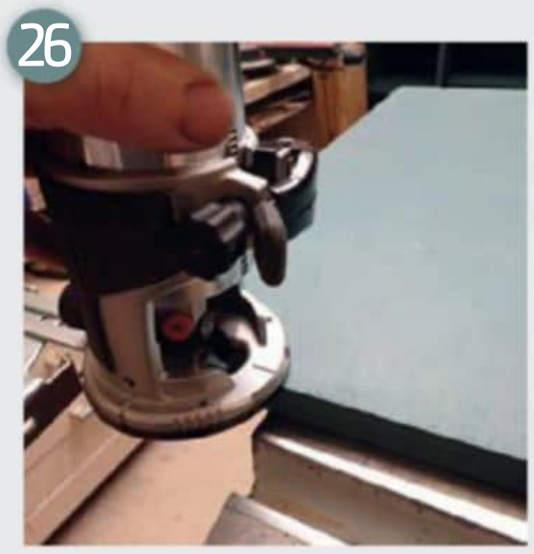
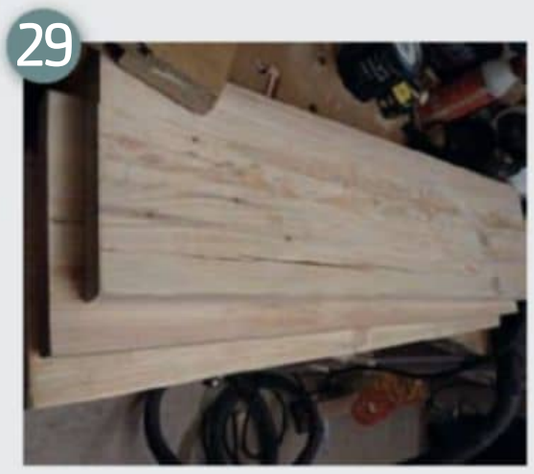
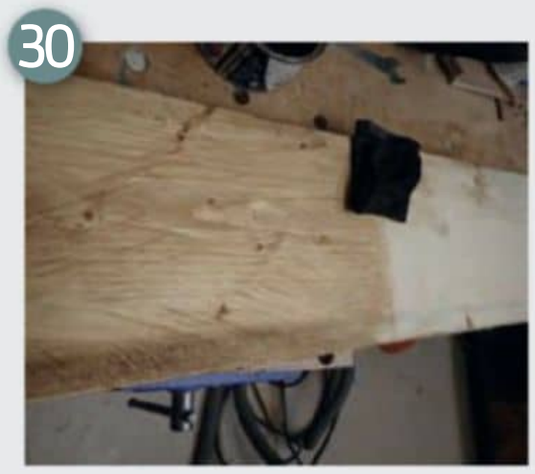
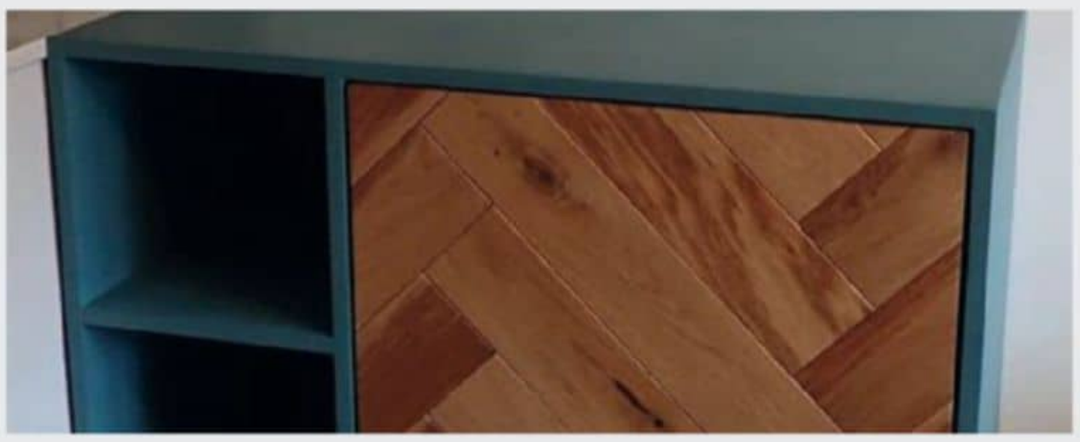




1. Once the boards were cut into manageable sections I brought them in to the workshop and cut them to their final size 2. Using a handheld router I added a groove to the back of the main body pieces 3. This was to accommodate a floating 3mm plywood back board 4. Make sure to stop before the end of the top and bottom pieces so the groove won't be visible in the final cabinet 5. The groove cut on all the boards 6. As I was going to use pocket hole screws to fix the cabinet together I added lines of three holes to the areas that would be least noticeable 7. Cut the backboard to size 8. To help everything to stay at 90 degrees during the glue up I used a few 90 degree clamps at the corners 9. Once I was happy with the squareness, I added the back panel and glued, screwed and clamped the cabinet 10. As the cabinet glue was setting I went on to the door. I started off by cutting a piece of plywood down to size minus 10mm on each side 11. I wanted to add an oak trim around the edge 12. To make the herringbone oak patterns I started off my re-sawing some oak plank 13. I used a planer to bring them all to the same thickness (around 7mm) 14. I laid out the oak on the door board, starting off with the whole pieces in the middle 15. Mark and cut the edge pieces as needed 16. Once they were all cut to size I used a router to add a chamfer to all the internal edges 17. I glued on the pieces in parts, started on one edge, clamping and leaving for an hour or two 18. Close-up of the edge 19. Once everything was dry I sanded with a random orbital sander to 180 grit and oiled the wood 20. Prior to painting I prepared the edges of the plywood and any small steps in the joints by adding a smoothing filler 21. Once the surface was uniform all over I painted the whole cabinet with a priming coat 22. The feet were made from quick fit scaffolding 23. To hang the doors I used soft close inset door hinges 24. I then added a spring loaded door latch 25. Once hung I adjusted the hinges so the doors hung with a constant gap all round and flush to the cabinet face 26. For the shelves I cut a couple of plywood pieces to size, painted and routed four grooves to the edges to accommodate peg shelf supports 27. I then made a drill hole jig so all my peg support holes would be the same distance from the bottom of the cabinet 28. Starting to take shape 29. The scaffolding shelves are made from scaffold boards and the same scaffolding as the feet 30.Once sanded I applied a coat of medium oak wax polish

While new additions can increase the value of your home, not all improvements have the same potential return.

TEN WAYS TO ADD VALUE TO YOUR HOME

If you're considering spending money on improving your home, it is worth considering what will add value while still adding the features you need. Here are some great ways to add to your home and its value.

1. Go green

Energy-efficient homes add value to your property, especially in South Africa, where energy consumption is a major issue. When renovating your home, consider going green as many homeowners are looking for homes with green utilities and technologies.

2. Increase kerb appeal

First impressions go a long way, especially among prospective buyers looking at properties. Improve the exterior appearance of your home by repainting the walls, replacing old garage doors, or even upgrading your outdoor lighting for maximum impact.

3. Window shutters

Shutters are not only versatile but timeless and beautiful as well. For homeowners thinking about putting your house on the market, adding shutters can do wonders to the price of your home. They're also custom-made and precise to the window space of a particular house and will remain in place once the home is sold.

4. Keep the garden tidy

Gardens are often overlooked but incredibly crucial and contribute to the overall kerb appeal of a home. Well-maintained outdoors spaces will attract buyers, whether for entertainment, dining or play. Homeowners are encouraged to invest in some landscaping to help your home really stand out.

5. Bathroom upgrades

Ask any real estate expert, and they will tell you that the bathroom and kitchen are the most important rooms in the home. Most prospective buyers look for modern designs and features, so if your bathroom is looking a bit outdated, it's best to focus on some improvements. If you're really looking to get the most out of your home, consider adding a guest bathroom or an en-suite for even more appeal.

6. Kitchen extensions

The kitchen is generally considered the heart of the home, and even a few basic improvements can really pay off. If your kitchen isn't very big, consider extending before putting it on the market for the potential to increase the house price.

Whether it's more cupboard space, worktop areas or even a dining space, bigger kitchens make the home much more appealing to buyers.

7. Convert your loft

Loft conversions can really add to the resale value of your home and actually costs less than any other extension elsewhere in the home. Lofts can be converted into an additional bedroom, a second living room, a cosy study or office space or even a gym for that wow factor.

8. Let there be light

Natural light continues to be highly desirable as it improves the overall feel of a home. A bright, airy room with lots of natural sunlight will always be more appealing and aesthetically pleasing than darker rooms. For rooms without much natural light, invest in some LED lighting as these bulbs save money as they use less electricity. Sellers can also leverage this as a unique selling point.

9. It's all about the floors

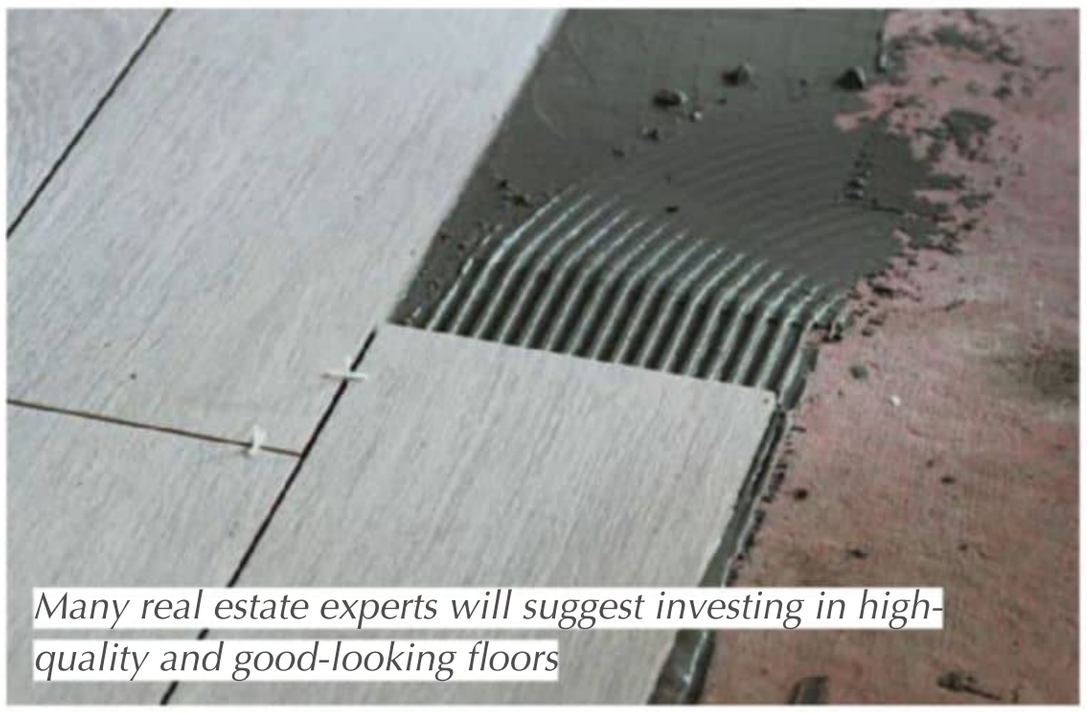
Many real estate experts will suggest investing in high-quality and good-looking floors. That said, redoing floors does not have to be expensive. Small changes, like repairing broken tiles and damaged floorboards and removing old, outdated carpets, can have a big impact. If new floors are needed, consider this an investment as many buyers will reject a house without the right finishes.

10. Security improvements

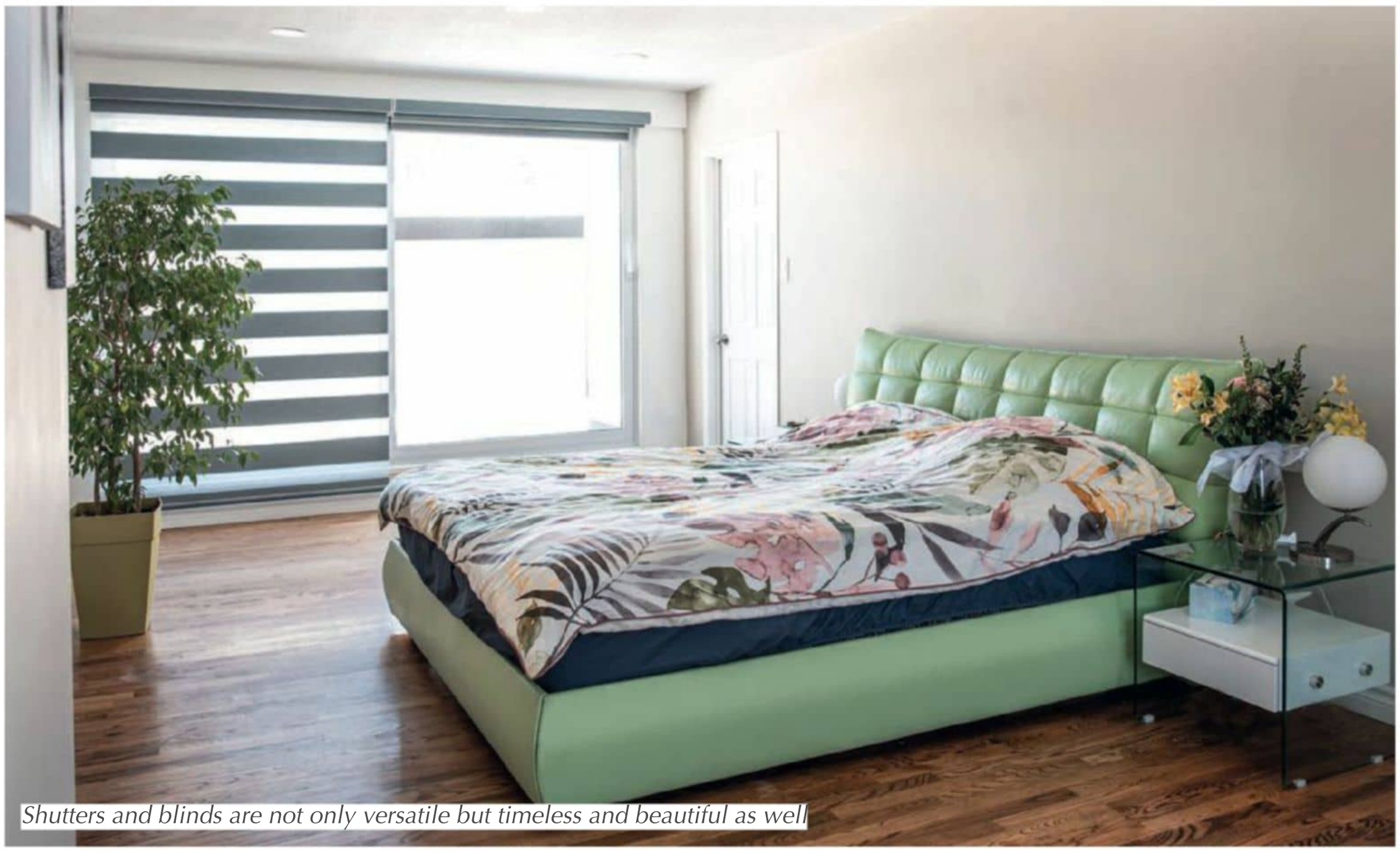
When making any home improvements, make sure your home is equipped with the necessary security features, and it will do well on the property market. Whether it's automated gates or a quality alarm system, these additions should be a priority, whether you're selling or not.

Home improvements do not have to cost the world, and by making small changes, it can increase the value of your home. That said, putting money into your home should be considered as an investment, and an important part of ensuring your property fetches a higher resale value once you're ready to put it on the market.

For more information, visit www.taylorblinds.co.za



Many real estate experts will suggest investing in high-quality and good-looking floors



Shutters and blinds are not only versatile but timeless and beautiful as well

Many South Africans, who may have held out in hopes of brighter days, are now considering installing solar power systems in their homes and business premises as the reality of load-shedding's longevity becomes apparent.

SHINING A LIGHT ON INSTALLING SOLAR

The various factors that must be taken into consideration when purchasing solar power, added to the abundance of product options and providers available, as well as the costs, can make it daunting and difficult to know where to start. To help take your first steps into solar, Orlando Luis, CEO of Brights Hardware, has created a list of the basic things to consider, and do.

Step 1: Do your homework before you install solar

"Firstly, try and reduce the amount of electricity that you consume. For example, if in your home you're still cooking on an electric stove, it might be a good idea to switch to a gas hob and oven. Also limit the use of things such as pool pumps and tumble driers. Whether in your home or business premises, it's a good idea to replace all your bulbs with energy-efficient LEDs and cut down on things such as the air conditioning or heating etc."

"Then decide what your goals are – do you want to have a backup source of power to get you through load-shedding, or do you want to get off the grid completely?" According to Luis, many people start with a more affordable basic system with the plan to upgrade over time, adding more solar panels and batteries, as budget allows.

"Next, you should measure your power consumption to better understand what size system you need to meet your immediate goals, and also your future goals (if you are planning an upgrade in time)," Luis advises that you can use your monthly electricity bill to get a guideline.

An important part of doing your homework before going solar is to choosing a reputable solar installer. "An experienced and reputable solar expert will be able to guide you on your solar installation in terms of meeting immediate goals, as well as a future solar system upgrade plan. They will also be able to help guide you on the choice of quality panels and batteries. In addition, they will work with you to meet the required by-laws and regulations governing solar installations," says Luis.

"Some things to look out for when choosing your solar contractor include an established track record with a list of contactable references, a strong commitment to aftersales service, and generous service warranties. It is important to find out if the contractor is accredited to install solar systems and can give you a certificate of compliance – which is required for insurance purposes."

"Using unqualified personnel or poor-quality equipment can cause power surges that result in damage to your

home's other electrical equipment or even fires and could lead to insurance not paying out in the event of household damage," warns Luis.

"Other things to consider include your budget, the slope, size and condition of your roof, and any rules governing your property such as those under a body corporate or municipal legislation."

Step 2: Buying the solar panels and batteries

Once you have ascertained your budget, usage levels, and solar goals, you will have an idea of how many solar panels and batteries you need. A good solar installer will also help guide you on this aspect.

"It is important to purchase good quality solar panels and batteries," says Luis, "and not necessarily always go for the cheapest on the market. For example, I always recommend lithium-ion over lead-acid or deep-cycle gel batteries because they have a much longer lifespan, however, they do cost more in the short run."

"When it comes to solar panels, the most important aspects to look for are if the panels are poly or monocrystalline, what their power and efficiency rating is, the overall quality and durability, and the manufacturer's guarantees."

Luis explains that mono-crystalline solar panels have solar cells made from a single crystal of silicon, while poly-crystalline solar panels have solar cells made from many silicon fragments melted together. "Mono-crystalline panels, in general, have higher efficiencies than poly-crystalline panels but are more expensive. The option you choose comes down to your personal preferences and finances."

All solar panels receive a power rating indicating the amount of power they produce under standard test conditions. According to Luis, a higher power rating means that the panels are more effective at producing power. "Solar panel efficiency represents how effectively a solar panel can convert solar radiation into electricity. Efficiency is particularly important if you have limited roof space and large energy bills. Look for solar panels that are ISO (International Organization for Standardization) 9000-compliant and certified, which means that they meet quality assurance standards. Solar panel durability metrics measure how well panels will hold up over time through years of outdoor wear and tear."

Luis goes on to advise that the manufacturers' warranties are an extremely important factor in the buying decision. "If a problem occurs post-installation, a strong warranty will protect you from financial loss. Read the fine print and check what the output warranties are, and what the material warranties cover."

Step 3: What you need to do once your solar system is installed

"It is important to note that if your solar installation is still tied to the electricity grid it must be signed off by a professional electrical engineer registered with the Engineering Council of South Africa and your system must also be registered with your local municipality."

"Then remember to let your insurance know about your new solar installation. Check whether your insurer has any additional requirements for insuring the system, and read your insurance policy to ensure it covers damage caused by extreme weather, power surges and fires."

"Going solar is not an inexpensive solution but done correctly it will provide many years of power solutions to your home or business premises, as well as increase the value and desirability of a property – not to mention the perk of weathering load-shedding with absolute ease."

All your solar questions answered

To help South Africans make the right decisions around installation and ongoing maintenance, Versofy Solar has collated the questions they receive most frequently and provided answers.

Thanks to load-shedding as well as the soaring cost of electricity, thousands of South Africans are investigating their options with regard to solar power. Understandably, they have a lot of questions. Solar energy experts Versofy Solar received more than 5 000 enquiries around home subscriptions since January, and they keep coming.

Ross Mains-Sheard, Director at Versofy Solar, answers 10 of the most frequently asked questions:

1. Is one brand of solar panel as efficient as another?

The efficiency of your solar panels depends on the amount of sunlight that they receive and their technical specifications. Some panels are more technologically advanced than others. Versofy Solar uses only best-in-class panels: Canadian Solar Panels and JA Solar panels.

2. How long does it take to install a household solar system?

Installing the solar panels, inverter and battery can be done within one to three days.

3. Can solar panels be installed on a flat roof?

While there are some aspects to consider, solar panels will perform efficiently on a flat roof provided that they are mounted securely and installed at the optimum angle. The optimum angle for a solar panel's performance in Johannesburg and Cape Town, South Africa, would depend on latitude and other local factors.

4. How many solar panels are needed for a typical house?

The average home will use between 6 and 12 panels, but the exact number depends on the area of your home, inverter capabilities and electricity needs. Choose an experienced supplier who can correctly assess your property and energy demands and offer flexible package options suited to your home and your budget.

5. Will the system work in extreme conditions?

Most are designed to withstand high winds, heavy rain and hail. Solar panels may actually operate more efficiently at lower temperatures than at very high temperatures, but extreme cold can reduce their efficiency.

Make sure that your panels are installed correctly to prevent damage, and to ensure that you are covered by your insurance.

6. Is it covered by a warranty?

In terms of performance, all of Versofy Solar's equipment is backed by robust warranties for the term of your agreement. Check that your supplier offers the same. As a Versofy Solar Subscription or Versofy Solar Care customer your warranties will be serviced by Versofy Solar for your peace of mind.

7. What are the payment options?

Solar as a Service: This is a pure rental product where there is no ownership of the system. Installation, monitoring and support is included. This option gives users all the benefits of solar, at a lower monthly cost, and without the associated costs of ownership.

Rent to Own: Rent to Own is just like a cellphone contract for solar. You are able to benefit from the full savings of owning the system after the contract is up. If you sell your home, you should be able to transfer your rental agreement into the new owner's name, subject to the new owner agreeing to the original terms and conditions.

Cash: This is when you buy the system outright. Positives are that you start to get a return on investment immediately. It also requires substantial upfront capital.

8. How much does it cost?

We are transparent about Versofy Solar's costing structure and are happy to share it for comparison purposes:

	SOLAR READY			
	Grow	**Grow**	**Charge**	**Plus**
PANELS	**NA**	**8 455w** 18kwh-20kwh/day	**10 455w** 21kwh-23kwh/day	**13 455w** 26kwh-28kwh/day
LIFO BATTERIES	**1 5kWh**	**1 5kWh**	**2 5kWh**	**2 5kWh**
HYBRID INVERTER	**5kw**	**5kw**	**8kw**	**12kw 3 Phase**
SAAS 36-month contract 5% annual escalation	**R1 299** per month	**R1 999** per month	**R2 999** per month	**R3 599** per month
RENT-TO-OWN 60 month contract	**R2 199** per month	**R3 499** per month	**R4 799** per month	**R5 699** per month
CASH Inc. VAT	**R99 000**	**R159 000**	**R219 000**	**R259 000**

9. What is the lifespan of a solar panel and how much maintenance does a household solar panel system require?

The lifespan of solar panels should be 20 to 30 years. They may require cleaning once or twice a year with water and a soft bristle brush, and you'll need to occasionally check that they aren't being obstructed by trees or debris.

10. How does one monitor the performance of the solar system?

Discuss inspections with your supplier upfront – if you're on a monthly contract, this should be included.

"There is still a long way to go to just getting people switched to solar and less reliant on the grid," says Mains-Sheard. "South Africans are very interested but understandably hesitant. I hope that by supplying these answers, we can allay some of the fear around the 'unknown' aspects of solar and reassure readers that installing solar is neither a mammoth task nor that it requires huge capital."

For more information, visit www.brights.co.za and www.versofy.com

BRIGHT IDEAS

Readers share their time-saving, space-saving or innovative ideas

Turn a hammer into a rubber mallet for pocket change

WINNER

Here's a trick I've used for more than a decade to turn a claw hammer into my version of a rubber mallet. Just fit a white rubber chair leg protector over the hammerhead. You can find them in four-packs at any hardware or discount store for just a few rand. The rubber cap pushes on snugly so it won't fall off. It works great, and the hammer won't mar your workpieces.

Paul Postuma

Saving screws with electrical tape

Recently, my beloved bench plane fell off the bench, and the handle cracked off at the top so it needed to be replaced. But you have to be careful when removing the soft brass screw that attaches the handle to the plane, because it will scratch and deform easily. In order to prevent that from happening, I wrapped the tip of my flat-blade screwdriver with several loops of electrical tape so that it fit the slot of the screw better. I use the same trick when I need to tighten the screws on my vintage hand saws, because it's hard to find replacement screws if I damage them.

Andrew Balbis

How to remove those sticky sanding discs

I bet you, like me, have struggled before to remove adhesive-backed sanding discs from your disc sander. Even when the disc is spent, that adhesive wants to keep sticking as you peel the disc off of the plate. The other day, I faced this task again but with a new approach: I dusted the backing with baby powder while using a putty knife to pry it off. The powder adhered to the adhesive to prevent it from sticking again, and it really helped. Make sure to vacuum the plate clean again before you install the new disc to keep it from coming loose.

Another option is to just warm the old disc with a hair dryer and it peels right off. This way, there's no powder residue to deal with, and you can install the new disc immediately.

Bob Greene

Tip-top tip for keeping glue tips cleaner

Until I discovered this trick, I used to get frustrated cleaning the dried, accumulated glue off the nozzles of my superglue bottles with a pliers – or worse, replacing the nozzles. Here's my solution: I wipe a thin film of petroleum jelly all around the nozzle before replacing the cap. The glue won't stick to the jelly. Now, my nozzles are clean, and the tips are clear whenever I need some glue.

Amy Nielsen, Randburg

SHARE YOUR IDEAS

WIN!

A Tork Craft Saw Horse set

Portable Saw Horse, Load Capacity 500Kg per Saw Horse, Working Height 730mm
Material: Steel - Body, Brackets and Legs, Rubber - Foot Pad, Plastic - Handle.

VALUED AT R1 095

Send your bright ideas to:

editorial@homehandyman.co.za with 'Bright Ideas' in the subject line or PO Box 24938, Gezina, 0031

Please include your name, physical address and a contact number (office hours). You may also include a photograph (300kb) of your bright idea (where applicable).

Please note: Winners' prizes may take up to six weeks for delivery and are sent by the prize sponsor. Prizes are not exchangeable.

Congratulations to Paul Postuma who wins a Tork Craft Saw Horse set.

FAMILY PROJECT

If you're looking for a fun and creative activity to do with your kids, why not make your own sidewalk chalk? Not only is it an easy project that you can do at home, but it's also a great way to keep your kids entertained and engaged with the outdoors.

MAKE YOUR OWN SIDEWALK CHALK

What you will need

- Plaster of Paris
- Cold water
- Tempera (poster paint)
- Mixing Jug
- Cups
- Spoon
- Mould or ice tray

With this non-toxic sidewalk chalk recipe, you can create your own colourful chalk in any hue you want, using simple ingredients that are safe for your kids and the environment.

Step-by-step guide

Step 1: Gather your materials and prepare your workspace. You'll need a mixing jug, a silicone mould, a set of cups, a spoon, plaster of Paris, Tempera poster paints, and some water. Make sure your workspace is clean and clear, and cover it with newspaper or a drop cloth to protect your surfaces.

Step 2: In a mixing bowl, combine one cup of plaster of Paris and one cup of cold water. Mix well until the ingredients are evenly combined. The mixture will become thick and pasty.

Give it a good mix by scraping the sides and bottom to make sure there is no unmixed or lumps of plaster.

Step 3: Separate your mixed plaster into cups, use the same amount of cups for how many different colours you wish to make. For this tutorial I'm using for different colours.

Step 4: Add a small amount of Tempera (both liquid or powder works) to each of your cups. A small amount will go far for colouring the plaster and mix well.

You need to work fast because the plaster starts to get thick really quickly.

Step 5: Spoon or pour each colour mixture into your chalk mould. Make sure to pack the mixture tightly into the mould to prevent air bubbles.

Step 6: Let the moulds sit for about 24 hours to allow the chalk to dry and harden completely. You can speed up the drying process by placing the moulds in a warm, dry place, but avoid exposing them to direct sunlight as it can cause the chalk to crack.

Step 7: Once de-moulded, let the chalks continue to dry for at least another 24-48 hours before using. Now you can use your homemade sidewalk chalk to create colourful drawings and designs on any pavement surface.

Remember to handle the plaster of Paris with care as it can cause irritation or burns if it comes into contact with your skin or eyes. Always wear gloves and protective eyewear when working with plaster of Paris.

Store your homemade sidewalk chalk in a dry and cool place. You can wrap the chalk in tissue paper or store it in a container with a lid. Avoid exposing it to moisture or humidity as it can cause the chalk to become soft or crumbly.

With these simple steps, you can create your own non-toxic sidewalk chalk that will provide hours of fun and creativity for your kids. So, gather your materials, get creative, and enjoy this easy and fun project with your family!

1

Gather your supplies

2

In a mixing bowl, combine one cup of plaster of Paris and one cup of cold water

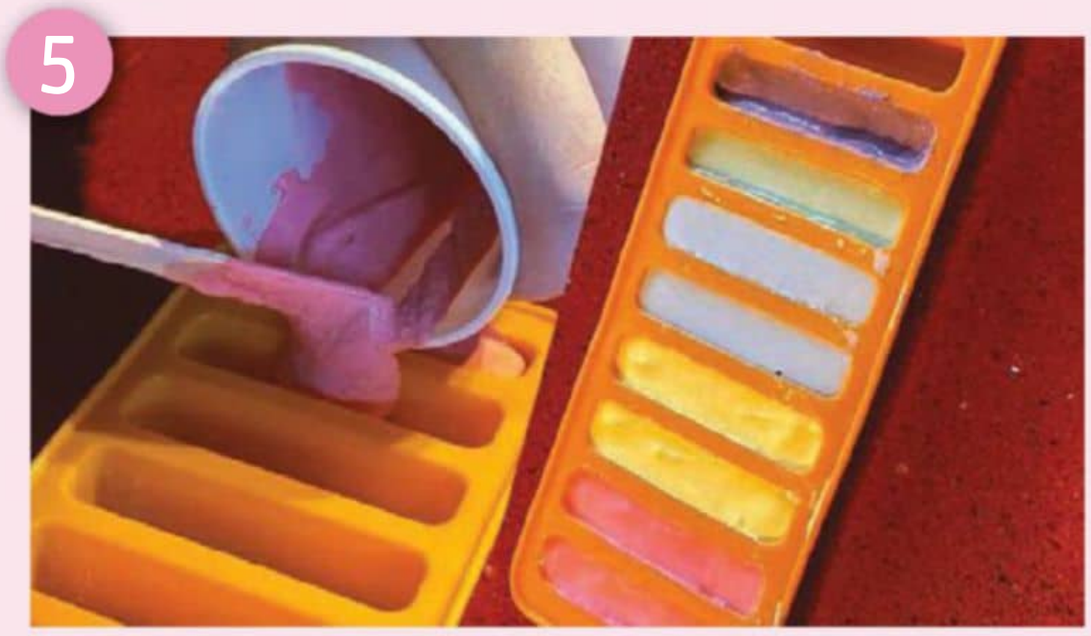
3

Separate your mixed plaster into cups

4

Add your colours

5



Spoon or pour each colour mixture into your chalk mould

6

Make sure to pack the mixture tightly into the mould to prevent air bubbles

7

Once de-moulded, let the chalks continue to dry for at least another 24-48 hours

8

ASK OUR EXPERTS

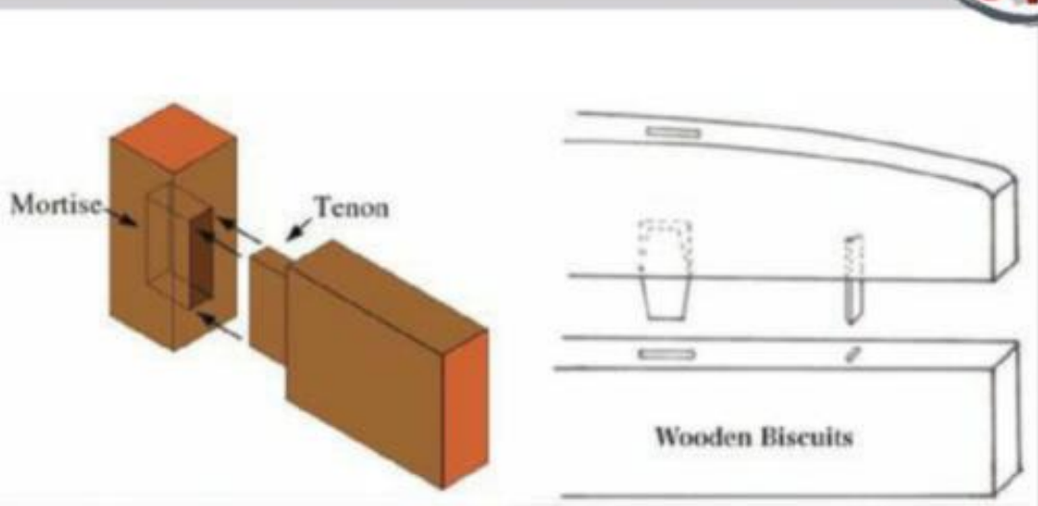
Our panel of experts answer your questions on DIY problems

Biscuits or mortise and tenons?

WINNER

This woodworker wants to know if he can use biscuit joints instead of mortise and tenon joints. The short answer is, of course, it depends. But the larger question is when should woodworkers use biscuits and when does a project call for mortise and tenon? Are there guidelines for making this decision?

Clive Fletcher, by email



Rick White: *It all comes down to strength. The biscuit joint doesn't give you the strength you'll get with a mortise and tenon. One issue to take into consideration is how the piece is designed and where the stress points will be. As a general rule, however, if I'm building furniture, I use the mortise and tenon. Furniture gets a lot of stress and wear and needs to hold together. For cabinetry, I'll use a biscuit joint. Most cabinets just hang on the wall and don't see a lot of stress, so biscuits are usually strong enough.*

Ian Kirby: *The larger question asks about guidelines for making decisions about the strength of joints.*

What we do is make our judgment based on empirical values; we rely on experience and observation. The outcome is that we usually make the joint overly strong. We have no idea by how much it's overbuilt, but as long as it doesn't break during its useful life, that's OK. Mortise and tenon type joints are the ones we use to join parts together to make structures that have to withstand stress ? chairs, beds, tables and the like. Maximizing joint strength seems to me to be a good idea – knowing more about it was what caused me to put forward a proposal for a dissertation whilst studying for my Wood Science and Technology degree. It's now more years ago than I care to think about, but loosely said, it was a comparison of the strength of mortise and tenon joints and dowel joints.

Well, the proposal got nixed because it was determined to be "insufficiently academic." Instead I did research on some microscopic comparison between two rare species of softwood – a subject of interest to me and two other people in the world. A couple of years later, FIRA (The Furniture Industry Research Association), a British organization, decided to fund research into what amounted to the same study I had proposed for my first dissertation.

WIN

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Our winning query comes from Clive Fletcher who wins a digital subscription to *The Home Handyman* magazine for a year.

The research was funded for one year – no report. Then it was funded for a second year – no report. Then a third year; the result was "there are altogether too many variables for the data to be of any practical value to a woodworker." Here is a sampling of the variables:

– How rough or smooth are the walls of the tenon, the mortise and the dowel hole?
– How round is the hole?
– How round is the dowel?
– How tight or loose are the interfaces of the parts?
– What glue was used?
– How thoroughly were the parts wetted with the glue?
– What species of wood was used?
– What was its growth rate?
– Were the joint parts tangential or radial tissue?
– What was the moisture content of the wood?
– And so it remains.

In a mortise and tenon type joint, there are two things to take into account with regards to strength: the mechanical strength and the glue line strength. To get a gauge of the mechanical strength, put the pieces together dry and test the sort of stress it would take to cause them to come apart. In other words, how much does the joint rely on the glue in order to stay together?

To illustrate the point, I'll briefly describe four of the options you generally have with this sort of joint situation: a traditional MandT, a loose tenon, a dowel joint and a biscuit joint.

Of the four, the traditional M and T is the only two-part joint. The others all bring into play a third element. Since the sizes and sections of the parts vary, each mortise and tenon is designed to be as strength-balanced as possible. The tenon part is no stronger than the mortise part. It's also designed to have the maximum glue area possible.

A loose tenon has much the same strength as a mortise and tenon. What you begin to realize now is that form doesn't follow function ? form follows economy. You only need one machine to make a loose tenon: a slot mortiser. The question is: can you afford one?

In spite of all the theoretical disadvantages and failings of a dowel joint, it mostly works.

The biscuit joint has quite a bit less mechanical strength than the other three and its glue area isn't great. But it scores big on the accuracy of its glue line. The walls of the joint are smooth, the plate swells to form a tight interface and, in many cases, it's possible to double up the biscuits so the gluing area is doubled.

At the end of the day, whatever you decide, you must ask: Is the joint sufficiently strong to outlast the useful life of the piece?

***Rob Johnstone:** Mortise and tenon joints can be decorative, but the main reason to use them is to join two pieces of wood in a strong efficient manner. My opinion, and I know it is in the minority, is that biscuit joints are handy for accurately aligning joints and nothing else. I don't believe an edge that is joined for glue-up is any stronger for having biscuits in it, but it is easier to line the edges of the glue joint up in a hurry. And if you are edge gluing five or six boards, biscuits are a real time-saver. So if the mortise and tenon joint is inteded to aid in alignment of a piece rather than creating a strong joint, I say go ahead and biscuit away. If you're asking if the biscuit joint would be stronger or superior in any other way, I say no.*

***Ellis Walentine:** Yes and no, depending on the type and severity of the stresses you expect. Technically, a biscuit joint is a type of mortise-and-tenon joint ? where one piece of wood penetrates and is glued into another. Both types of joints keep parts aligned and offer resistance to twisting, shearing, levering and pullout forces on the assembly. The strength of every type of mortise-and-tenon joint depends on several things.*

1. *The type of wood determines the mechanical strength of the joint: harder, stiffer woods are more resistant to breaking.*
2. *The design of the joint is also important. It involves the proportions of the mortise, the tenon and the "shoulders" where the two parts actually meet.*
3. *But, for practical purposes, the glue area is what really holds the joint together. Biscuits don't offer as much glue area as traditional tenons, so you need more biscuits to equal the pullout and levering strength of a tenon. On the other hand, biscuits generally provide enough glue surface to keep the shoulders tight, which makes the joint just as solid. Biscuits are best suited for plywood case construction, for which they were originally designed. They also are fine for long edge joints, some cabinet doors and other types of frames, including those with mitered corners. Properly designed biscuit joints ? often involving multiple, ganged or stacked biscuits – have also been used for demanding tasks such as full-size doors.*

Personally, I prefer the security of deep, accurately machined tenons for heavier-duty applications where greater mechanical strength may be needed.

WORDS OF WOODWORKING WISDOM

Denis Lock shares tips and tricks learnt from more than 70 years of woodworking practice, 18 years of freelance woodworking journalism (more than 130 published articles), 15 years of running a woodworking school and more than 600 students.

>> Denis Lock

Drilling angled holes

A few years ago I swopped my cumbersome, heavy cast-iron drill press for a Bosch PBD 40 bench drill (Photo 1). I should have done so much, much earlier. The Bosch is light weight and I simply move it around my workshop. It also goes on site with me. I really enjoy the digital speed and depth control and the laser indicator. It does, however, have some shortcomings: the throat is smaller and it does not have a tilting table.

Last month I featured an Oregon hall table that I converted to a vanity unit. Photo 2 shows the shortened substructure and the connecting strips (A and B) used to join the shortened halves together again. Connecting strips A presented a slight problem: there was not enough space to fit a screwdriver in to drive the holding screws. Angled holes were needed, and I no longer had a drill press with a tilting table. My first attempt was to place a pencil against the fence and tilt the strip at an angle on the pencil (Photo 3). This didn't give a large enough angle, so I added a biscuit under the pencil (Photo 4). This did the trick: sufficient angle as can be seen in Photo 5. The remaining seven holes were quickly drilled using the Bosch bench drill, a pencil and a biscuit. How is this for a hack?

Storing dowels and other rods

The best way to store dowels (or other rods) is to bundle them together in a cylindrical cluster (Photo 6) and wrap masking or insulation tape around them at two or more spots. When you come to use the rods, you will find that the tape has left a sticky residue on the rods. The solution to this problem is to wrap a strip of paper (some 50 to 60mm wide) around the dowels first (Photo 7) and then wrap the tape (Photo 8). When you come to use the dowels, they will be clean.

Repairing water damaged MDF

There was one leak in the roof of our new workshop. Unfortunately, our large clamping and sanding table was directly under the leak. The damage can be seen in Photo 9. Not only was it stained. The damaged area was spongy and raised by 3 to 4mm. This expansion was the real problem. A clamping table must be perfectly flat. Five percent damaged surface did not justify a replacement of the table. It had to be flattened and it had to be accurately flattened. A belt sander was not the answer.

A router, an extended base, a guide bush, a tip-cutting straight router bit and a pattern the size of the area to be trimmed was the answer. The four pieces marked P in Photo 9 formed the pattern. The pattern opening was larger than the router base, so an auxiliary base (Aux Base in Photo 10) was fitted. The original router base was removed and replaced with a plywood auxiliary base (Photo 11). The original base was used as a template to drill the attachment holes in the auxiliary base. This base is four times the area of the standard base and comfortably spans the pattern opening.

A guide bush was fitted to the router. I used a straight router bit with a bottom cutter insert (Pro-Tech KP114053). The depth of the router bit was set at an undamaged spot within the template enclosure (Bit depth setting Photo 9). The guide bush and pattern constrained the router cutting to the damaged area. I did a once-round (clockwise) cut running the guide bush against the pattern. I then systematically made left-to-right cuts followed by right-to-left cuts till the whole damaged area was flattened as seen in Photo X. The length of these cuts was controlled by the guide bush and the left and right pattern

Bosch PBD 40 bench drill

pieces. I was very pleased with the result of the routing (Photo 11) and after removing the pattern pieces gave the routed spot a once over with my orbital sander.

The hole in the roof has since been fixed. I learnt a valuable lesson: seal jigs and accessories the minute the construction is completed. My choice of sealant is Woodoc 30.

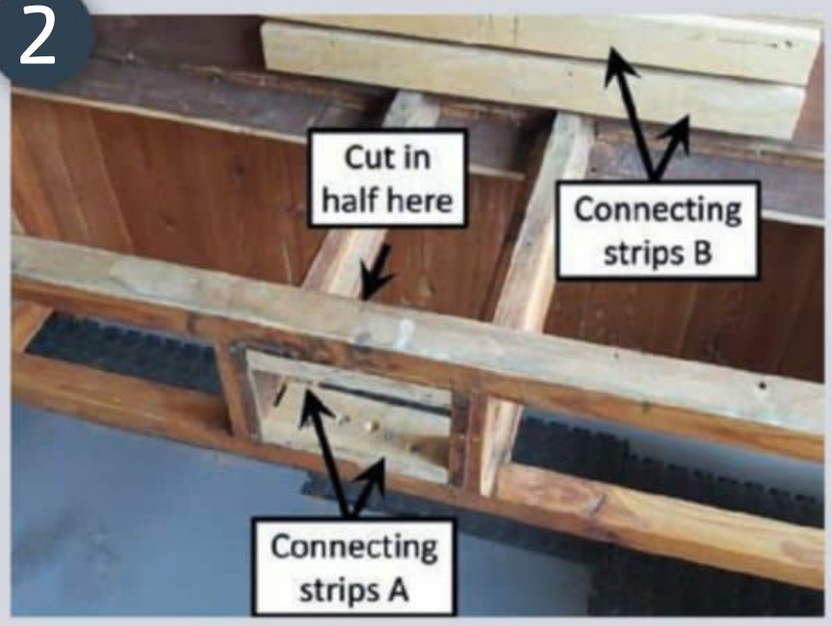
Trimming biscuits safely

I recently built a storage unit for the theatre in our retirement estate. It is the lower unit (a lighter grey) seen in Picture 12. It will be used to store the large number of DVDs the club owns. It is made from PG Bison's Storm Grey Melawood. We edged all the pieces with 2mm Storm Grey plastic edging using our new Festool edge bander. The joinery is simply biscuits: in total 70 were used.

The top and bottom pieces are 6mm wider than the vertical dividers. The vertical dividers are 2mm wider than the shelves. This results in a more forgiving assembly: the face of the unit is in three vertical planes. No two adjacent pieces have to line up exactly and all edges can be broken with x mm round-over.

A #20 biscuit is 23mm wide: two cannot be used back-to-back on the16mm vertical dividers. I had two choices: either trim 4mm off one edge of each biscuit or don't use back-to-back slots. I decided on the latter; the left-hand shelf edge had three biscuit slots and the right-hand shelf edge had two biscuit slots. This required that the right-hand divider face had three slots and the left-hand divider face had two slots. This resulted in the need for very careful layout. I made a mistake on one board and was 8mm out with my marks for the biscuit centres. The mistake was repeated with two pieces of scrap to demonstrate (Photo 13) what I am talking about.

The correction that immediately comes to mind is to recut the biscuit slots in the correct position. I have done this before but found that the biscuit slot was left a fraction too wide. Cutting a biscuit with a handsaw is unsatisfactory. Cutting a biscuit on a bandsaw in looking for trouble. So, we came up with a simple answer (Photo14): a piece of scrap MDF with a biscuit slot cut into it to safely hold the biscuit being cut.



Two halves re-joined

Too little

Good enough

Screws driven at an angle

6

Circular bundle

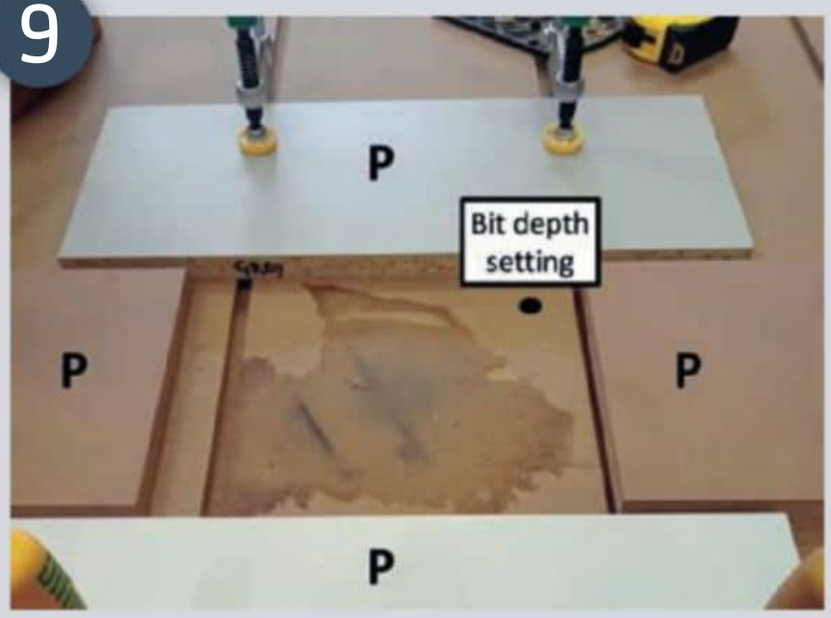
7

Plain paper wrapping

8

Masking tape not touching dowels

9



Water damage

10

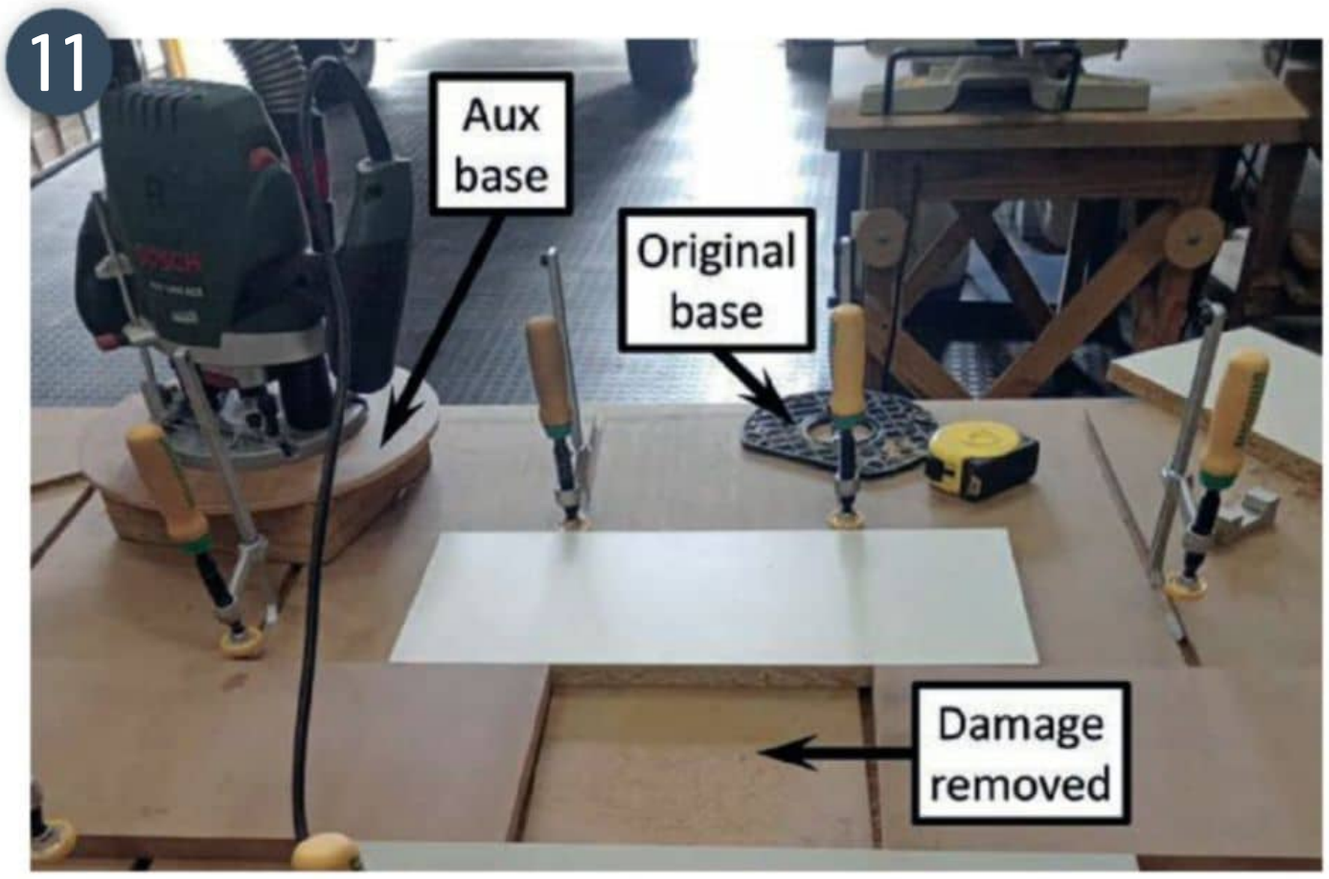
Auxiliary base

How do I pattern rout shallow flat-bottomed recesses?

Question: I want to pattern rout shallow flat-bottom recesses to mount hardware such as butt hinges and recessed handles. I also want to pattern rout shallow recesses in a variety of boards and trays. I have no trouble in making routing patterns from 6mm MDF. The problem I have is that my pattern bit (Pro-Tech KP122009) with a shank mounted bearing has a 25mm cutting edge. To cut a 3mm deep recess (for, say, a butt hinge) I have to raise my pattern 22mm above the work. This is cumbersome: in fact, impractical. Do they make pattern bits with a shorter cutting edge?

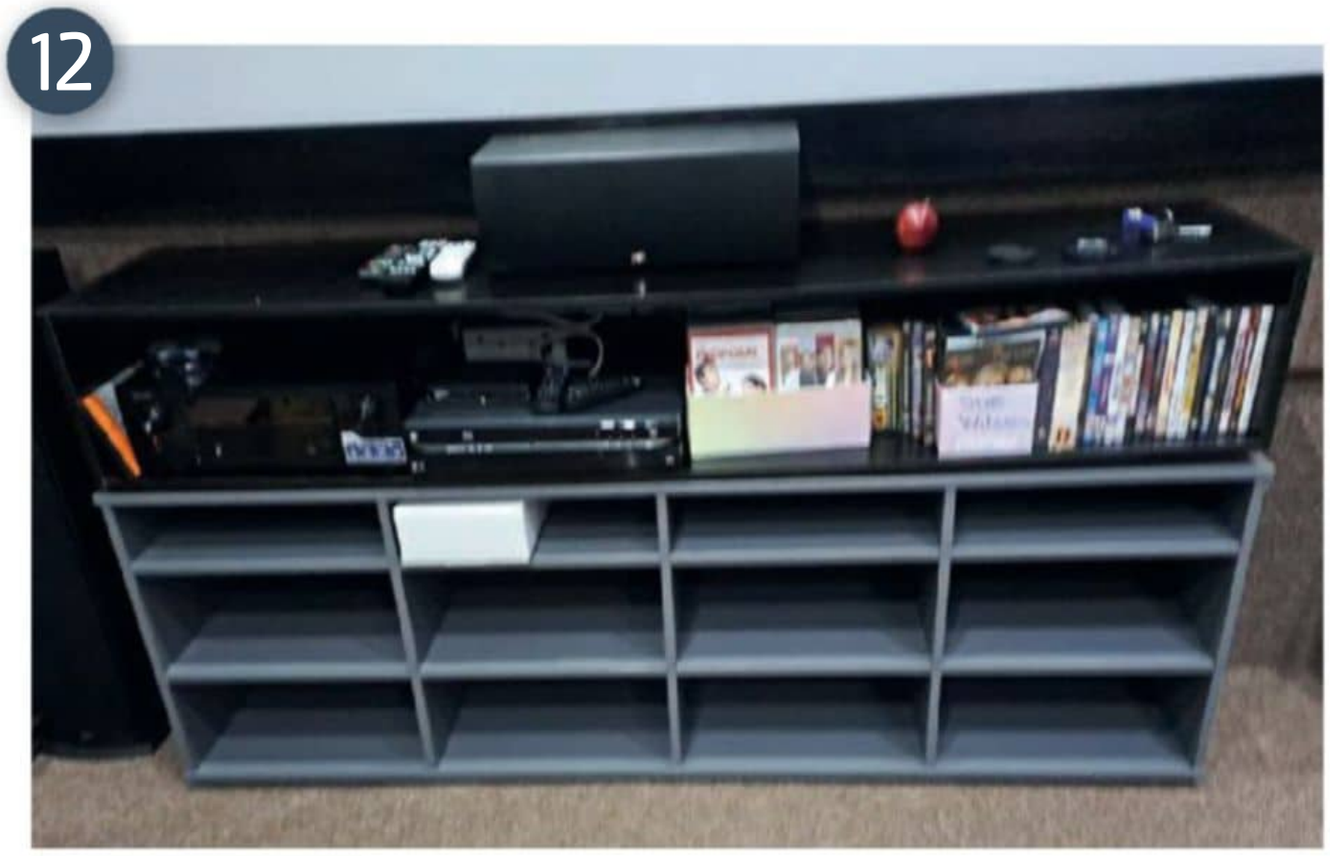
Answer: Yes, they do. In fact, pattern bits with shank mounted bearings are made with 1/8″ and 1/4″ cutting edges (Picture 15). These are generally called dado cleanout bits and were developed for this purpose. A dado cut on a radial arm saw or a table saw by making multiple cross cuts will have a ridged bottom. Many dado blade sets have the same problem. The sides of the dado act as a pattern and constrain the bit within the dado. Picture 16 shows the bit in use. One more pass and all the ridges from the bottom of the dado are gone. The mating piece now fits exactly without any ugly gaps.

11



Damage removed

12

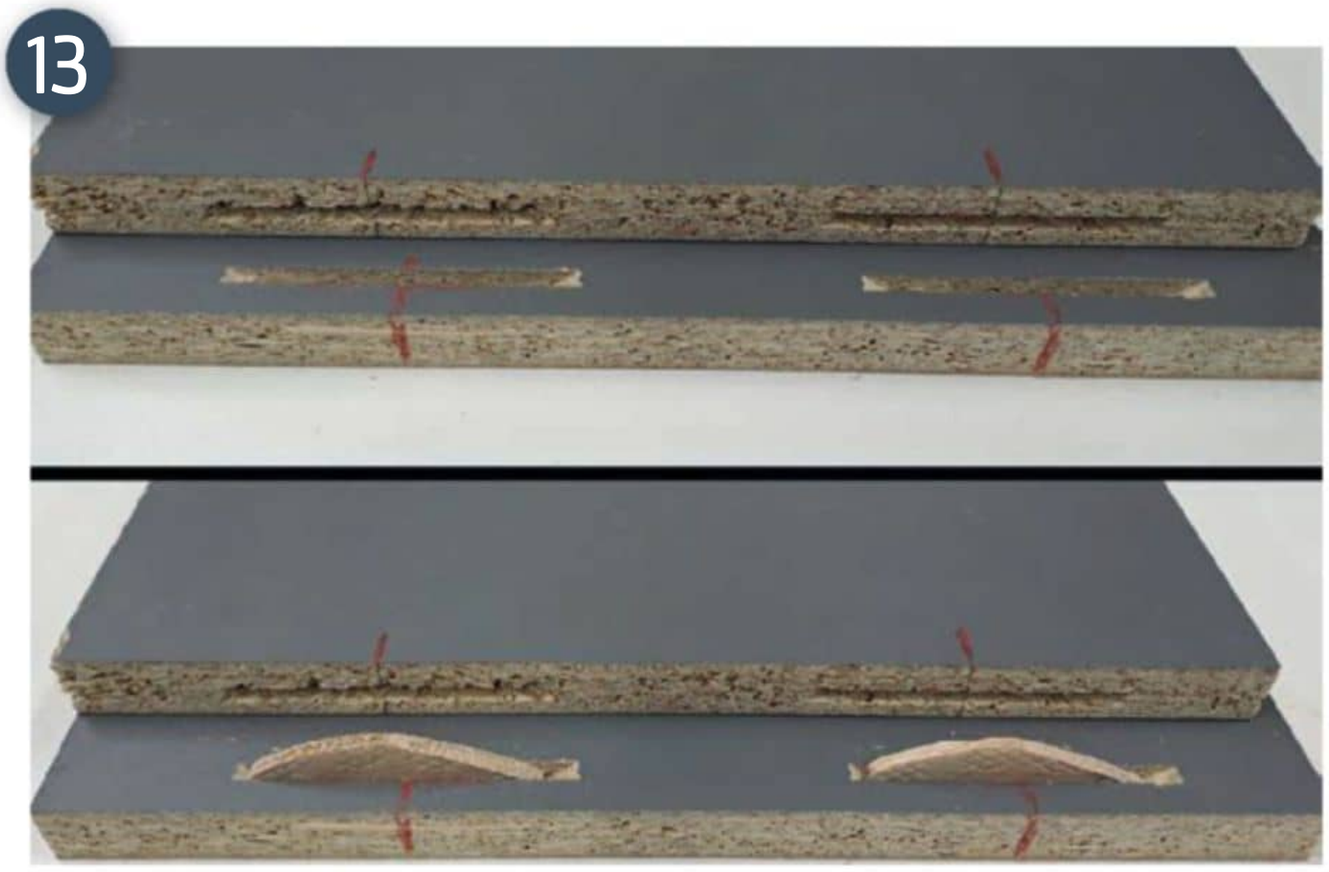


Theatre storage rack

The bit, of course, is a pattern bit and can be used to rout shallow flat-bottom recesses. There is one problem: I do not know of anybody in South Africa who stocks this bit. So, your only solution is to import a bit from the States or Europe. Wait there is another solution: one that uses accessories you most probably already have. A guide bush and a tip-cutting straight router bit (Photo 17) will give the desired results. You could cut a flat-bottomed recess 0,1mm deep if needed. There is one catch: the template has to be oversize as shown by the formula at the bottom of Photo 17. My Bosch router has a 17mm outside diameter. This bush used with a 12mm straight bit (Pro-Tech KP12MM) results in a template offset of 2,5mm. In total the template must be (2 x 2,5) = 5mm wider (longer) than the desired recess. I use the shank of a 5mm drill bit to gauge the total offset. This technique works well: Picture 18 shows some narrow flat-bottomed recesses I have routed using a guide bush. You don't have to pay a fortune to import a special bit!

This is the second issue of my new column. I have decided to include some of the queries I receive, and the answers I give, from my students and other parties. Hence the extended title.

13



Slots don't line up

14

Trimming biscuits

ABOUT DENIS:

Denis Lock runs a woodworking school and shop. He can be contacted at denis@tacazze.co.za or 082-267-5948.
Visit his website at www.routingwithdenis.co.za

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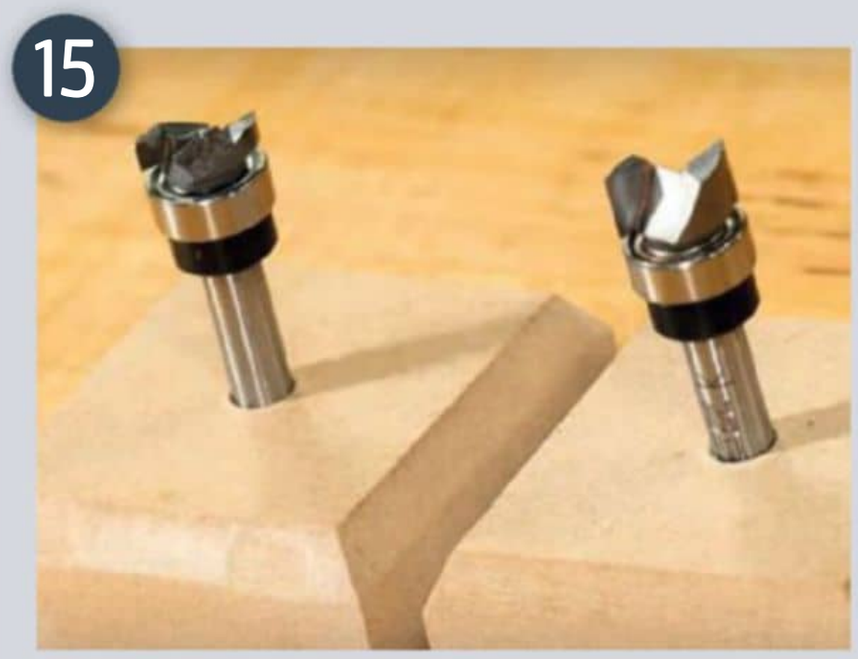
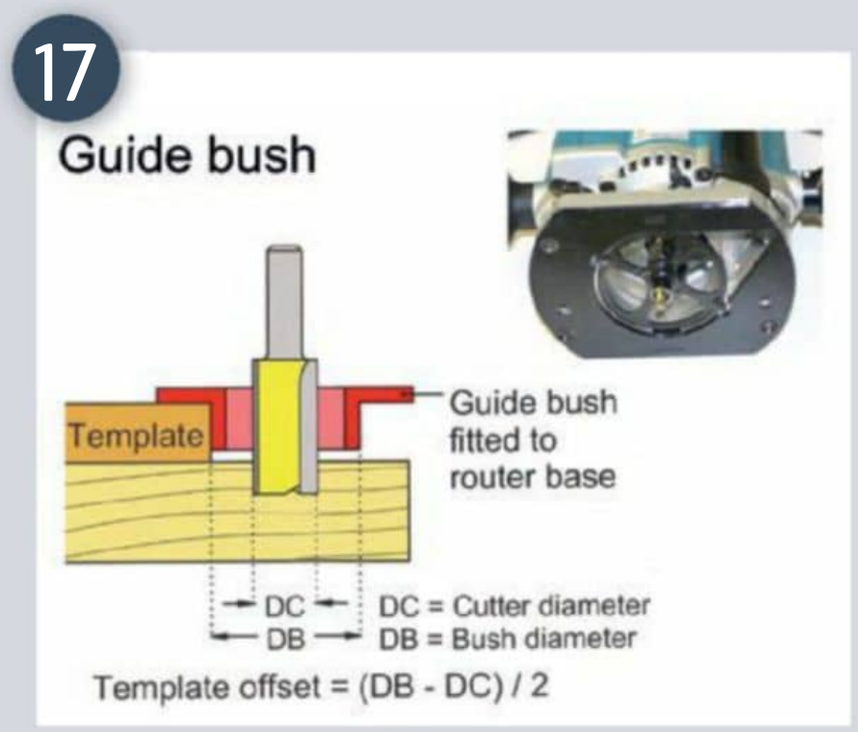


Dado cleanout bits

16

Cleanout bit in use

17



Guide bush schematic

18

Shallow flat-bottomed recesses

WOODWORKER'S CORNER

Sharing techniques, ideas and a love of wood

Accomplished young woodworker

>> By Denis Lock

I met Dylan West at Hardware Centre's 2022 Winter Expo. We were demonstrating router techniques and Dylan spent some time at our stand. I was surprised at his interest and intelligent questions about our demonstrations. I offered him the opportunity, something I don't normally do, to try out one of the techniques (face pattern-routing) we were demonstrating. He performed the exercise perfectly and I was again impressed: this time by his excellent eye-hand control. Further conversation revealed that he had his own router and a workshop at home.

I decided there and then to invite him to attend my Fundamentals of hand-held routing course. At the time I was busy relocating and refurnishing my workshop/classroom and this did not happen till earlier this year. Dylan was an excellent student (Photo 1) and learnt a lot that morning. Imagine my pleasure when his Mom sent me a picture of him with a cutting board (Photo 2) he had made as a gift. Using his router he had cut a juice groove and two shallow round recesses for sauce bottles. He currently working on a further nine boards for Fathers' Day presents. I look forward to further contact with Dylan (a 13-year-old, year 6 student at Village Montessori School) and seeing further examples of his craftsmanship.

My plea to all parents reading this is that, like Dylan's parents, you encourage your child (and provide the wherewithal) for them to participate in craft work. It will be a great pity if your child grows up without having experienced the pure joy and satisfaction of having made something with their own hands.

Woodworking courses in Cape Town

Based in Cape Town, The Mercury School of Woodwork offers you the opportunity to rediscover the age-old craft of woodwork.

Whether you are a complete novice or a seasoned woodworker wanting to brush up on technique, you'll find the course that suits you. Their youngest students were at Grade 8 level and the oldest at 72 years!

The school was established in 2006 with the aim of providing students with the opportunity to gain knowledge of woodwork techniques, materials, machinery and finishes in a friendly, fun

and safe environment. Their small classes ensure the perfect balance between shared learning and individual attention.

They currently offer Beginners, Intermediate and Advanced courses in their Foundation in Woodwork program. The three Foundation in Woodwork courses are also offered in the form of the Intensive Course, when all fifteen lessons are completed over five days, from Monday to Friday. This course has proved to be very popular with students from all over South Africa and overseas.

For more advanced students, the Cupboard Building & Installation Course is available for anyone who wants to learn the business side of the building and installing kitchen or bedroom built-in cupboards. This course follows the week after the Intensive course, offering a comprehensive two-week carpentry program.

For more information, visit www.woodworkcourses.co.za

Essential tools required for starting a woodworking business

Starting a woodworking business can be an exciting and rewarding journey, but you'll need the right tools to bring your cabinets and other awesome creations to life.

The list below includes prices for everything from a table saw and band saw to a wood machine cutter that you'll need to get started along with approximate prices in South Africa.

Whether you're a beginner or an experienced woodworker, this list will help you determine what tools you'll need and how much they will cost.

Remember that investing in quality tools will not only make your work easier and more efficient, but it will also help you produce high-quality products that will impress your customers and allow you to charge premium prices.

Table saw	R12 000 to R25 000
Band saw	R7 000 to R20 000
Wood machine cutter	R5 000 to R50 000
Jointer	R8 000 to R20,000
Planer	R6 000 to R15 000
Router	R2 500 to R7 000
Drill press	R3 500 to R10 000
Scroll saw	R4 000 to R8 000
Sander	R2,500 to R7 000
Drill	R1 500 to R3 000
Jigsaw	R1,500 to R3 000
Handheld circular saw	R1 500 to R3 000
Handheld power drill	R1 000 to R2 000
Chisels	R200 to R500
Screwdrivers	R100 to R300
Measuring tape	R50 to R100
Safety equipment such as safety glasses, dust mask, and ear protection	R50 to R200

Please note that these are approximate prices and may vary depending on the specific tool and the location.

For specialty tools that you won't use regularly, you could consider hiring them from a tool hire shop for a day or so to avoid investing money unnecessarily. Additionally, you can also find some of these tools second-hand or at a discounted price.

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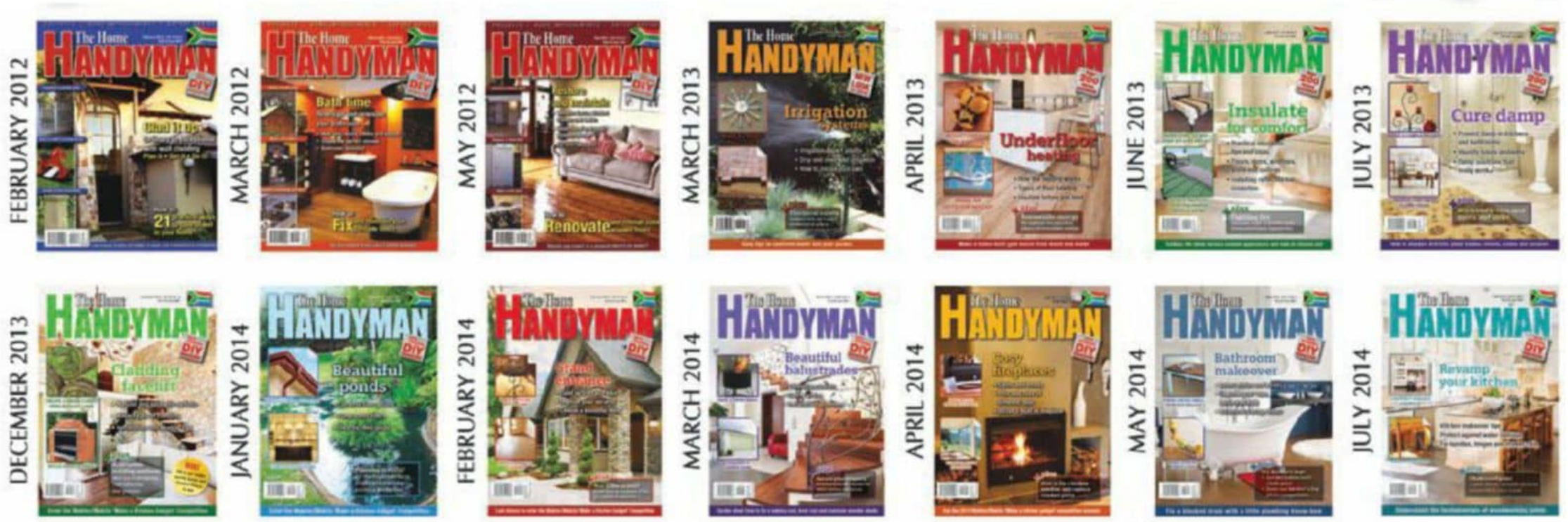

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5 easy ways to improve your inner DIY'er

Trying to channel your inner weekend warrior? Whether you're trying to take up a hobby, be more handy around the house, or you're buying a home for the first time, being a DIY'er is an essential trait that you need to begin mastering.

1. Tinker like there's no tomorrow

Nobody ever walked into this world and just had natural-born talent. Even those with an aptitude for specific hobbies or strong traits that make them better in certain areas, still have to put in an absolute ton of work to refine their skills. Point blank, you have to break things and make mistakes before you can really hope to be an excellent DIY'er.

You have to learn how things work, inside and out. Even if you have a good amount of working knowledge, you should still be bringing little odds and ends to your workbench to discover how they work, and what it takes to pull them apart and expertly reassemble them again. It can be anything at all, so long as your goal is to dissect, inspect, and repair it.

2. Stop trying to schedule your DIY projects

If you're not working, then you have time to refine your DIY skills. There are so many people that make the mistake of scheduling a specific time each day to be able to tinker or work on projects: you just need to let it rip. Another negative to scheduling or arranging time segments to devote to your DIY projects is that it cuts things short. You might be persuaded to take shortcuts you otherwise wouldn't have thought of.

3. Ask for assistance when you can

Nobody on this planet can expand their know-how without a little help along the way. There's nothing wrong with asking for help, so long as you intend to learn from it and better your own personal knowledge of proper DIY techniques. Pay attention to what a neighbour or friend has in his toolbox, do they prefer corded or cordless drills, ask them why they enjoy their preferences on tools. Even if they don't end up being your new personal favourite way of doing something, you'll still be able to learn from them and move forward with your next project a little bit wiser.

Last but not least, your pride shouldn't take a hit just because you asked for help. There's a ton of people who would rather do it wrong than feel like a fool for asking.

4. Be ready for anything

Sometimes DIY comes in the form of repairs, not just building things or making small adjustments around the house. One of our favourite things to always have on hand is a great multi-tool, one that can perform a series of a dozen-or-so functions on the fly. Multi-tools are also a time saver if you've hit an unexpected snag and you're not able to get to your favourite selection of tools for the job.

5. Don't leave tasks unfinished

We've all heard the dopey tale of the hapless husband who's 'half-fixed' a bunch of things around the house, only to have his wife complain about them. Yeah, it's a reality, and an ugly one at that. It's the one stereotype you need to avoid, and here's how to do it:

Simply finish what you start. If you get frustrated with a task because you can't make it perfect, out-of-the-box and polished on your first attempt, it's no reason to walk away. Even if it's not ideal, finish what you started. Don't walk off and research without any attempt to return and finish the job.

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