The Home
HANDYMAN
April 2018 • Vol 28 No 4

SA'S ORIGINAL DIY MAGAZINE

BOOKCASES MADE EASY

MAKE A COFFEE TABLE

Harvesting Rainwater

+plus

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- Eco-friendly DIY
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QUICK FIX

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About *The Home Handyman* magazine:
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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REGULARS

Back and here to stay

After about a year and a half of waiting for another publisher to take over The Home Handyman magazine I grudgingly started to accept it had died. This despite the fact that we left a following of loyal DIY'iers with nothing to read and the industry continues to grow. Young people cannot easily afford homes these days and if they do manage to get one financed, you'd better bet they're going to be painting the walls before long. Not only that but many ladies have given up on relying on their men to do the DIY at home.

So in early February, after being told the magazine was to be re-launched in April and that they would like me to continue on as editor, I sat in limbo for a week trying to figure out how to get the magazine out on time. It became clear that the time spent doing not very much over the past year had definitely affected my ability to get the job done. This despite my dream coming true two-fold as the new publisher of The Home Handyman magazine is WJ Lindeque cc, publisher of SA Bass magazine!

Then it happened... We sent out the announcement – The Home Handyman is back and here to stay and the messages of encouragement began to flood in.

You can read some of these on the Voice Your Views page (6&7). The truth is, The Home Handyman readers are who I missed most. After hearing from you I came to life and in more than one way you have inspired me to start living again. The fact that so many people are willing to spend their time putting things together for the magazine with the only reward being to share the joy of DIY with others is phenomenal.

The piece of wood you can see pictured on the right will, with any luck, make it into the next issue of the magazine. It is a piece of rough sawn and partially planed American ash measuring approximately 500x200x50mm. In the past I have taken on woodworking projects that may be a bit beyond my capacity and a lot of time was spent. Since you cannot purchase a decent bread board these days, well not at the shops I frequent, I thought a very nice bread board would make a good re-entry. If you have any suggestions please give me a call or drop an email.

Gareth Greathead

The Home HANDYMAN

www.homehandyman.co.za

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OFF THE SHELF

Your guide to the latest products in the world of DIY

Pumping water upstream

Water shortages are likely to remain a concern in the years to come, along with the potential of increased water shedding efforts. As with electricity, we will need to find off-the-grid solutions to maintain water supply. TRADEpower Jet Pumps have the ability to lift water from low-lying water tables (boreholes or river edges) or storage facilities (rainwater harvesting tanks) to supply the home or low flow irrigation systems. The Jet Pumps are superior to centrifugal pumps as they can dispose of the air originating from the water column, increasing reliability.

For more information:
Visit: www.lgtools.co.za
Tel: 031-717-6800

Light everywhere you go

With the My-Powa Kit you have access to light and power to charge your phone anytime, anywhere. The kit comes complete with a solar panel, a 1 watt LED light, a cable, switch and powerbank. The kit comes in a compact carry case.

For more information:
Visit: www.sungridgroup.com
Tel: 021-380-0302

Shape cutting master

The Makita 18V Brushless Jig Saw DJV182ZK offers superior runtime because there is none of the friction and heat associated with conventional brushed motors. The reduction in heat means that the tool can be used for a longer period of time even in hard industrial applications requiring continuous operation. Another benefit of brushless technology is that the lifespan of the battery is increased due to the lighter load on the powerpack.

Special features and specifications:

- Variable speed
- Electric Brake
- Orbital action
- Bayonet shank
- Built-in job light
- Carry case
- Optional dust nozzle
- Capacity: wood – 135mm and steel – 10mm
- Stroke length: 26mm
- Strokes per minute: 800-3500
- Weight: 2,6kg
- Battery, charger and dust nozzle sold separately.

For more information:
Visit: www.makita.co.za
Tel: 011-878-2600

Workshop in a box

The POWER8Workshop's design is centred around an armoured case that makes use of four cordless power tools and the patented 18V POWERhandle system. The compact combo kit comes with a jigsaw, circular saw, drill driver and work light. Each power tool uses the same battery, but most impressive is that individual tools, along with the universal battery, can be attached to the armoured case to create an eight-function workshop. All of the tools fit into a canvas bag that fits into the armoured case for easy transportation.

Special features and specifications:

- 18v 2.6Ah Li-ion POWERhandle
- 140mm-diameter circular saw blade
- Jigsaw with quick release multi-blade mechanism
- 3W LED work light
- Stainless steel post/fence with drill press return spring
- Fixed metal protractor
- Work clamp

For more information:
Visit: www.thebrostore.co.za
Tel: 012-460-2806

Extend the usable life of sanding belts

Sandpaper often gets clogged before it becomes worn, especially when removing varnish. This means you are wasting money that may be better spent on other tools and accessories. The Tork Craft (TBC32324) Sanding Belt Cleaner cleans sanding belts of all grits by removing accumulated particles that lodge between the abrasive grains and cause a dull cut. This low cost item saves on material resources and also avoids the frustration caused by repeat visits to the hardware store. Tork Craft products can be found at most hardware stores.

For more information
Visit: www.vermontsales.co.za
Tel: 011-314-7711

Professional drill for DIY enthusiasts

The Bosch GBM 13-2 RE Professional Drill bore precise and consistent holes every time. In addition to its quick action and keyed chucks, it has a precision chuck with an additional clamping ring to hold the drill firmly in place for pinpoint accuracy. It's perfectly suited to everyday use with metal, carpentry, roofing, and masonry applications.

Features and specifications:

- 750W motor
- Two-speed gearbox and spindle speed pre-selector
- Motor cut off protection to protect the user
- Maximum diameters (first gear) – 13mm in steel and 32mm in wood

For more information
Visit: www.bosch.co.za
Tel: 011-867-7763

Superior jointing

The JET JWS-34KX SHAPER is the perfect machine for making your own tongue and groove joints, raised panels, mouldings and more using solid wood. This machine is also ideal for making rail and stile type joints when making kitchen doors.

Features and specifications:

- 30mm shaft
- 2 600W motor, 230V
- 4 speeds: 1 700 to 8 000rpm
- Optional sanding drums and tenon table
- Split fence to support wood after it has been cut
- Mitre gauge included
- Ring fence for shaping curved surfaces included
- ¼ and ½ router collets included

Please note: All tooling is sold as an optional extra

For more information:
Visit: www.strandhardware.co.za
Tel: 041-585-6996

Compact planer thicknesser

One of the biggest challenges when working with solid timber is milling it to usable proportions. The relatively high cost of thicknesser planers inhibits many from keeping these in their workshop, meaning reliance of others. The Toni Planer Thicknesser solves this problem by offering an affordable, compact bench-top machine.

Features and specifications:

- Motor: 1.28kW
- Cutter block speed: 8000 rpm
- Surfacing table: 737mm x 210 mm
- Thicknessing table: 250mm x 204 mm
- Plane width: 204mm
- Combination top jointer and planer
- Two high speed blades
- Machined table top
- Precision adjustment knobs

For more information:
Visit: www.newcopowertools.co.za
Tel: 011-315-1504

VOICE YOUR VIEWS

Do you have any thoughts or comments on DIY issues?

WOW! WOW! WOW!

You made my day with the great news that the Home Handyman Magazine is coming back. It was just the other day that I was telling my dear wife how I miss that magazine after being a subscriber for so many years (she loved reading it as well)!

We certainly look forward to purchasing the first new copy in April when it hits the newsstands and I am sure it will be just as good, if not better, than its predecessor.

As an architect and DIY fan of many years standing, I hope to be able to contribute some project and design ideas which you may be able to publish.

Stan Segal, Sandton

My wish came true

I am so pleased that The Home Handyman is back!

I was watching the magazine displays every month, just willing you back, and my wishes came true. I am fairly active in my home workshop and will try to put together some stuff for you to share with the readers. I am retired now and try to spend as much time in my workshop as I can. Anyway congratulations, I have already subscribed and looking forward to receiving my first edition.

James van Heerden, Brakpan

Ed replies: Thank you very much for the words of encouragement. It's so nice to have readers willing to spend their own time putting things together for the magazine, expecting nothing in return other than to spread the message.

Testing drinking water

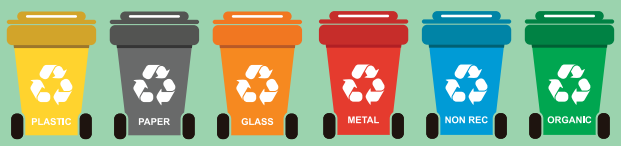
I am glad to see the magazine has been resurrected at last. It was always full of articles that we all got some fine ideas from. Water is top of mind for a lot of people at the moment and I hope this is a topic you might want to include in the re-release of the magazine.

We need an article on how to test well point water (WPW) for iron and other contaminants. Some suggestions on purification of well point water to remove iron would be helpful. What does each process do; air-rating, adding chlorine, charcoal purification, pool sand filtration and other options.

Rael Aginsky, by email

Ed responds: Good to hear from you again Rael, thank you so much for your mail. I almost left my chair and congratulated the team when reading it. The theme for the April 2018 issue is sustainability and the main feature covers water storage, filtration and purification. We didn't fully explore the testing of water at home but I understand that it is possible. Does the water coming from the well remain of a fairly consistent quality? If yes it may be worth taking a sample of your water to a lab to be tested for a baseline and you can work from there. The article does cover filter media and what you can use to remove iron. No doubt we will be doing more research on water treatment in the near future and we will get an expert to answer this question more fully.

Trash is king



Firstly, let me declare undying gratitude for such a wonderful and informative magazine. I must also say, in comparison with many other magazines, The Home Handyman magazine is by far the best and what I love most is that it is the cheapest on the market.

I would, however, like you to show more encouragement in the field of 'reuse, reduce and recycle'. You would be amazed at how much we could recycle around our homes, saving us loads of money as well as our environment.

I have an old planer which I varnished to give it oomph and now use as a door stopper. Old car brake shoes make simple paperweights on a cluttered table and an old kettle or colander makes a lovely pot plant holder outside the kitchen door. I also used my bit of brass curtain rods to make a lovely decorative chime for the patio.

These are just a few, but there must be others out there who would like to share their ideas too – it would make for quite an exhibition. I, for one, would love to see other ideas. I have also reused old cupboard doors and frames to make a tool shed in my garage, making my tools invisible to the inquisitive.

You would also be amazed by how innovative children are when asked to make school projects from waste.

This would also benefit parents and other students.

Heather Thring, by email

The phony contractor

I own a few properties which I have bought over the years. They are all paid for and the income I get from them keeps my lights on. I don't know what I would have done without them, seeing that my pension barely pays for my monthly groceries. But, being a pensioner and owning properties does not mean you get to sit back and wait for the money to come in. No, it is hard work maintaining my properties and keeping my tenants happy. Not that I mind, seeing that it keeps my head fresh and my body young.

But, for the life of me, it seems that gone are the days when you can trust anyone. I have never been a bossy person, but when it comes to getting stuff done, I have to be constantly ruthless or the contractors take shortcuts and do as little as possible for as much money they can get from me. When you are in this game, you learn to deal with this. I have also burnt my fingers in the past, but through experience, I came to understand the mind of the bakkie contractor. Yes, hang me for using a bakkie contractor, but if I didn't I would have become bankrupt long ago. Don't you think an article on how to deal with contractors would be an appropriate topic to discuss? I feel there is so much one should know before getting any contractor in and not anyone can afford to learn from mistakes. But if I can just give one tip to everyone out there, "never pay upfront or pay a deposit for that matter and never trust the lowest quote".

Neil Vermaak, Gauteng

Ladies in DIY love their power tools

Having become one of the biggest names in the game SuzelleDIY's message to women is simple,

"Don't be scared of power tools. They are my second-best friend, after Marianne. Power tools are there to make the job at hand that much easier."

She says her Bosch combi cordless drill, is one of the most versatile tools ever and an integral part of her daily existence. She even uses it to whip egg whites and beat butter in the kitchen.

"I love my cordless drill," she says.

Elle Franco, co-presenter on Home Made Easy, as seen on DSTV Home Channel says,

"You just have to master one thing at a time. Power tools are not there to scare you, but are there to get the job done. It is really not that difficult, and looks far more intimidating than it actually is. If you respect the tool, and know how it works and what the safety features are, it is your best friend. If you try to cut corners and don't do your homework, you could hurt yourself and delay the project. It is all about believing in yourself. Do not say no if you have never tried it before," says Elle.

Elle says her personal favourite is the Bosch compound mitre saw, which takes the pain out of cutting wood to size.

"I used to have to go a hardware shop in order to use its in-store cutting service, but the Bosch compound mitre saw makes this arduous task a cinch at home."

Elle says it is important for women to break down the stereotype that DIY is for men only.

"Don't be shy because you're a girl doing DIY. I still love fashion, for example. I just happen to be a woman with both a big shoe collection and a power tool collection."

Not only is the number of women involved in DIY growing steadily, but Suzelle also thinks that their influence as both a market and a target audience is underestimated.

"It is the girls who are driving the DIY industry by becoming creative and inspired enough to tackle projects in their own homes. Never under-estimate a lady with a power tool. I think she will go places," says Suzelle.

Professional wood care for DIY'ers

Home Handyman readers are already familiar with A.Shak DIY originals like; ScrewGoo, FlexiFilla, PlasterKey, TilePrime and Drikon drain cleaner. The company prides itself on providing only the best products and after sales service to its customers. With this in mind it has made the decision to extend its product portfolio to include an established brand in timber preservation products.

Technical sales manager at A.Shak, Neville Short says, "Deccare might be new to A.Shak's product offering, but is not exactly new to the market. Deccare was developed in 1983, the

original product was named American DeckSeal, and later shortened to DecSeal. DecSeal is the original water based wood sealer, being sold only in trade markets. In South Africa it has been used extensively in some of the most high profile coastal projects in KwaZulu-Natal."

With the introduction of the solvent based sealer range (DecOil), the idea was to offer a total care solution for wood. A.Shak has retained the historical Deccare slogan but has rebranded the product as Premium Collection WoodSeal and WoodOil. The company plans to compliment the release of these products with several others designed for use with wood in the coming months.

For more information
Visit: www.ashak.co.za
Tel: 086-112-7425

Gateway to Africa's timber trade under one roof

WoodEX for Africa will be taking place from 11-13 July 2018 at Gallagher Estate in Midrand. It will showcase everything from; the biggest CNC machines to the smallest screws, from the loggers of the great outdoors to sleek laminated flooring. WoodEX for Africa plays host to the most specialised, yet comprehensive range of equipment, tools, machinery and wood products available on the market.

While the WoodEX for Africa exhibition is a focused event, its showing has been carefully cultivated over the years to include a wide-ranging representation of products and services. According to WoodEX for Africa organiser, Stephan Jooste, "Right from the start WoodEX has had both indoor and outdoor exhibition areas to showcase products optimally, with big names like Wood-Mizer, CMC Woodworking Machinery, WoodTech, Geerlings, Bosch, De Walt and Vermont Sales, among others, proudly taking space at the show."

"Heavy forestry and wood-processing equipment and machinery are best positioned outdoors, not just for practical reasons, but for exhibitors to demonstrate their equipment and machinery put to the test in its natural environment. The outdoor exhibit has always had a special vibrancy of its own with highlights over the years including exciting portable sawmill demonstrations, three-wheeler testing as well as a chainsaw wood carving competition."

Indoors, WoodEX for Africa will showcase large CNC machines, woodworking machinery and equipment, veneering equipment, ply woods, tooling, fixtures and fittings as well as paints and coatings, and industry associations, making the show the most inclusive showcase of timber and related products and services on the continent.

The events of the day will be concluded with its highly-anticipated Timber Talks. WoodEX for Africa has something on offer for every timber professional looking to enhance their knowledge and understanding of the trade.

For more information
Email: info@woodexforafrica.com

Measuring made simple

Find out how to use a DIY digital multimeter to safely assess whether or not there is current flowing

>> Roelof Strydom

Electricity is dangerous and sometimes you may second-guess whether or not the electrical supply is off when you want to work on an electrical outlet. DIY digital multimeters allow you to measure before you touch anything to make sure there is no current.

How to measure

To measure with a multimeter, the unit needs to be switched on, the test leads inserted into the correct jacks and the rotary switch has to point to the specific function you want to measure.

Measuring direct current (DC) voltage

DC is the unidirectional flow of electric charge. DC is produced by sources such as batteries and solar cells. To measure DC voltage with the multimeter, the black test lead needs to be inserted into the COM jack and the red test lead into the VΩmA jack. Next, the rotary switch needs to be set to the DC function. There will be a few different ranges within the DC function. When the voltage being measured is unknown beforehand, set the range selector at the highest position just to be safe. This way, the multimeter cannot be damaged due to over-voltage. If the source's voltage is significantly lower than the range selected on the multimeter, it will be displayed on the screen and you can now safely bring the range on the multimeter down until the correct reading is given.

In the case of over-voltage, every multimeter will have a means of indicating when there is an over-range situation. This means the voltage of the source being measured is greater than the range selected on the multimeter.

WARNING!
Always be cautious when measuring high voltage and never measure more voltage than the multimeter is rated for. This will lead to injuries such as burns and in severe cases death.

When this happens, you need to select a higher range on the multimeter. This should be avoided because even though the multimeter will be able to measure a bit more than it is rated for, it can permanently damage the multimeter.

Measuring alternating current (AC) voltage

With AC the movement of the electric charge periodically reverses direction. AC is generated by power stations and it is the form in which electric power is delivered to businesses and residences.

The usual wave form of an AC power circuit is a sine wave. To measure AC voltage with the multimeter, the black test lead needs to be inserted into the COM jack and the red test lead into the VΩmA jack. Set the rotary dial to the AC (V~) function. Again, there it will have a few ranges. Start off with the highest range to prevent damage to the multimeter if the source's voltage is unknown. Connect the test leads across the source to get a measurement. If you want to work on an electric house outlet and the intention is to make sure there is no current flowing before work

continues, set the multimeter to the highest range, which in this case is 500V. In South Africa voltage at electric outlets is between 220V and 240V, therefore it falls in the range of between 200V and 500V. This means that setting the multimeter at the 200V range will be too low and can possibly damage the multimeter.

Measuring DC current

Some multimeters can only measure DC current and cannot measure AC current. You should not attempt to measure AC current with such a multimeter as the consequence of such actions will lead to a broken multimeter and possible injury, such as burns.

If the source's current is unknown, set the range selector to the highest position. To do that, connect the black test lead to the COM jack and the red test lead to the 10A jack. Turn the rotary dial to the 10A range in the amperage function. Now the test leads can be connected across the source and the reading will be displayed on the screen. To measure the DC current of a source rated at 200mA, the maximum range should be selected because the source's amperage rating is less than 10A and greater than 200mA. By doing this you will still get a correct reading without damaging the multimeter. For sources with lower amperage ratings, the red test lead can be set to the VΩmA jack and the range selector set at the correct range.

Measuring resistance

The electrical resistance of an electrical element is the opposition to the passage of an electric current through that element. To measure the resistance of an electrical wire, connect the black test lead to the COM jack and the red test lead to the VΩmA jack. Once again to be on the safe side, set the range selector to the highest position. When checking in-circuit resistance, all the power of the circuit under testing should be removed.

Measuring temperature

Multimeters that can measure temperature will have an extra pair of test leads. These are called thermocouples. These will also have a red and black test lead, but at the other side there will be a sensor probe. So, to measure temperature, insert the black test lead into the COM jack and the red test lead into the VΩmA jack. Next, put the sensor probe into the temperature field under measurement, and the temperature reading will be displayed on the screen. Never place this sensor probe against a wire where current is flowing. You can, however, place it against the insulation on the wire to measure the temperature. A wire that is too small for the amount of current it has to carry can get hot and you will be able to detect this by placing the sensor probe on the insulation. This sensor probe can also be used to test the temperature of boiling water in a kettle or the ambient temperature in a room. Do not place the sensor probe in an open flame as it will melt.

What is the hFE function for?

This is to measure the gain of transistor circuits in fine electronic circuits and components.

Note

The COM jack stands for 'Common' and the black test lead will always be inserted into this jack.

Harvesting Rainwater

Your Ultimate Guide

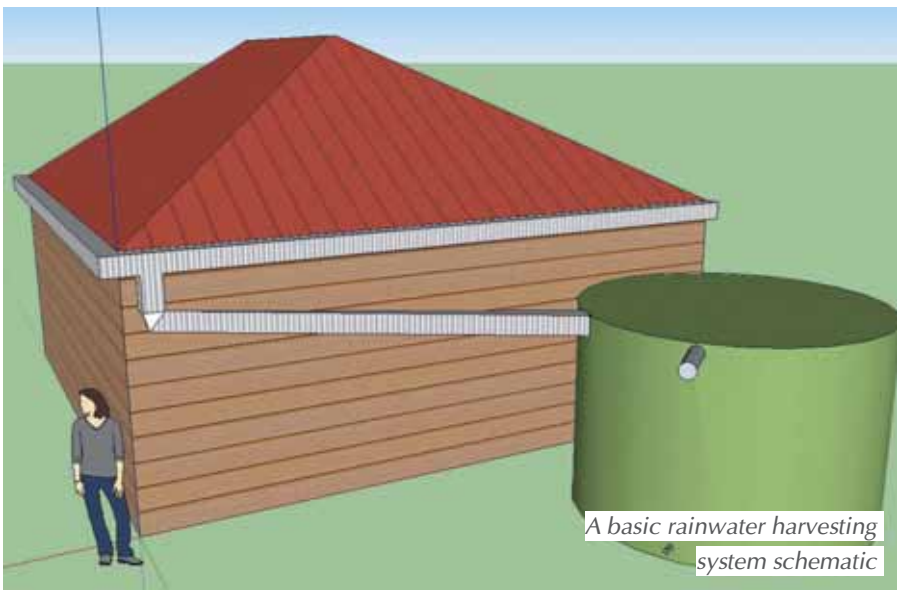
Ensure you insure your water security and save water when it rains

>> Gareth Greathead

Selecting a rainwater tank

- Standard duty and vertical tanks are usually used for residential purposes
- Choosing between above and underground tanks depends on space availability and aesthetics. Underground tanks, however, are more difficult and expensive to install
- If you plan on using your tank for drinking water you need to select one that is food graded and suitable for storing potable water
- If it stands in the sunlight, rather choose lighter colours

Since 2015, Cape Town has had below average rainfall and now faces the worst drought in 100 years. As such, on 1 February, level 6B water restrictions were implemented to force homeowners to reduce daily water consumption to a maximum of 50 litres per day per citizen. At the time of writing 'Day Zero' in the Western Cape, when taps will be switched off, was set at 4 June 2018. Day Zero is calculated with consideration given to dam levels, current usage and the recent release of water into public dams by farmers.



A basic rainwater harvesting system schematic

While the recent postponement of Day Zero to the rainy season in Western Cape provides more hope, Day Zero is still a real possibility.

Day Zero begins once dam levels reach 13.5%. Essential services and certain densely populated areas will still have access while the rest will queue at one of 200 different collection points around the city for their share of 25 litres daily. The 25 litres is meant to be enough for basic health and hygiene. Thus, unless schools and businesses have their own safe supply of water they will have to close. Also, there will not be enough water to flush toilets and people may have to consider dry sanitation systems.

An underground aquifer is a layer of water bearing permeable rock from which groundwater can be extracted. Already, the City of Cape Town groundwater aquifers are making additional potable water available municipally. Between 2018 and 2020 the groundwater aquifers in and around the city will produce a combined total of 150 million litres of water per day. The city has also begun construction on three temporary desalination plants which are projected to produce a combined total of 16 million litres of water per day once operations start between March and April 2018. The last reported daily water usage, under current restrictions, was 526 million litres.

Changing attitudes

For the rest of South Africa, it is easy to think of the water crisis in Cape Town as their problem, even if you are doing your bit to contribute. South Africans use an estimated 235 litres per person per day compared to the global average of 173 litres. The truth is all major cities face an impending crisis if you take population growth statistics into consideration. If South Africans do not change their water use habits, and if alternative solutions are not investigated, it's only a matter of time until the water runs dry. In fact, many countries worldwide face the same dilemma.

>> If Day Zero becomes a reality, Cape Town will be the first city in the western world to run out of water.

Specialised tanks make it possible to use the space you have available

A leaf eater deflects leaves and debris away from the water flow before it enters the tank

One change all South Africans can make is to start rainwater harvesting. Rainwater can be used for a wide variety of purposes, even drinking, if treated and filtered correctly. The first step is to purchase a rainwater storage tank you can place in a good water catchment area, like under a gutter. Rainwater storage tanks range in sizes from 260l to 20,000l. The size that you choose depends on your budget, intended use and potential catchment areas. To calculate roof runoff, one millimeter of rain on 1m2, is estimated to deliver 1l of water into a tank. The 5,000l tank is a popular choice for residences.

Cleaning and maintenance

How well you maintain and clean the tank determines what you can use it for. Devices to reduce foreign objects from entering the tank are standard for most uses. Pre-filters are your first barrier of entry for larger organic material, bugs, leaves and other debris. The more solids you remove during pre-filtration, the fewer chemicals needed to disinfect the water in the next steps.

First flush diverters have chamber with a float that prevents debris from entering the tank following first rains

Devices to prevent debris entry

- First-flush diverters: a chamber with a float that rises to prevent debris from entering the tank following first rains.
- Leaf eating devices: deflects leaves and debris away from the water flow before it even enters the tank, reducing sediment and increasing water quality.
- Gutter Guards: prevent clogging and limits build up of leaves in gutters. These too require regular maintenance as the leaves can break down and pass through if not removed.

There are other things you need to do to prevent debris from reducing the quality of water collected. Firstly, keep the catchment area

clean. Clear gutters regularly and cut down overhanging branches nearby. Clean gutters also increase water collection by preventing clogging. There is also a screen or guard over the water inlet and an overflow valve where debris and leaves need to be cleared away regularly.

Ensure water does not pool near catchment areas. This attracts mosquitoes and can even create ideal conditions for breeding. If there are mosquitoes or eggs in the tank, find out where they entered the tank and seal it. The inlet or outlet screens may not be closing properly or have holes.

Sludge

Sludge is something else that can affect water quality. Fortunately, you only need to check for accumulation of sludge every two to three years. In less severe cases, remove sludge with siphoning otherwise you may need to empty and clean the tank completely using a high-pressure washer. A large amount of sludge indicates inefficiency in the catchment area.

Algae

In the warmer parts of South Africa you may struggle with algae and need to clean it often. In these areas, choose tanks with a black inner lining and lighter colours outside. The black reduces light, and consequently algae growth on the inside, while the exterior deflects light. Certain chemicals can kill algae but it requires more filtration afterwards.

Gutter guards prevent cloggingandlimits build up of leaves in gutters

How to reduce algae growth:

- Select tanks with smooth inner surfaces
- Position tanks in the shade
- Cover tanks with shade net or creeper plants
- Filtration systems can also catch loose algae

What you need to know

Municipalities charge for water and sewerage in a block tariff system. The more you use, the higher the tariff. Municipalities charge for sewerage based only on the volume (number of kilolitres) of water that you consume. They calculated some time ago (though very erroneously) that 70 percent of the water that you consume through your water meter is wasted into the sewer as treatable effluent. Whether you have a rain harvesting system or not, they will only be able to charge you for the amount of water that has run through the water meter, and the same goes for the sewerage charge, at whatever tariff is applicable, based on 70 percent of that metered water.

You will not be charged for the rainwater used at your house. Do not think that you are being unfair: The municipality will still charge you for the effluent portion of your metered water at the rate of 70 percent, even though you may be reusing grey water for irrigation purposes. As a matter of interest, grey water (water from baths, showers, hand basins and your laundry) and black water (kitchen, toilets and bidets) goes in the same pipeline to the sewerage treatment works. If you do recycle grey water from your house to your garden for irrigation purposes, you send as little as 5 percent instead of 70 percent of your consumed and metered water from municipal source into the sewer for treatment at the sewerage treatment works.

Filter	Removes:	Not suitable to remove:
Carbon water filters	Chlorine, volatile organic compounds, sediment	Salts, minerals, toxic metals, dissolved organic compounds
Ceramic water filters	Dirt, bacteria, debris, protozoa, microbial cysts	Viruses
Reverse osmosis filters	Arsenic, chlorine, fluoride, sediment, iron, bacteria, viruses, heavy metals, nitrates, many microorganisms, bad tastes, odours	There is significant difference in the effectiveness of the basic and more advanced versions
Refrigerator water filters	These make use of carbon or charcoal filters	

Good enough to drink

These basic steps allow you to use the water from your storage tank for watering the garden, flushing the toilet and in the washing machine. The holes in the screens and guards of a basic system are unable to remove the smallest organic particles, pathogens, minerals or heavy metals. With additional water treatment, filtration and testing you can even drink water obtained from your storage tank. By taking a sample of your water to a local hydrobiology lab you can test the quality of water you managed to obtain from your tank.

>> Do not drink water from your rainwater tank unless it is an absolute necessity and it is approved for drinking purposes.

Siphoning

Before trying to remove rainwater from your tank it is important to ensure you give the sediment time to settle. This allows for the formation of a biofilm, or float to seal in the silt at the bottom of the tank. Once settled, pump the water from the middle of the tank so that you do not disturb the sediment.

Use a floating filter as this enables you to pump the water from the middle where it is the cleanest and most oxygenated. It also has an additional filter that catches any sediment in the middle water. This filter also increases longevity of pumps and reduces maintenance on post-tank filtration components.

Post-tank filters

Choosing the correct filter is important if you intend drinking the water in your storage tank. The results from the water sample will guide you in this.

Whichever filter you choose, it is essential to change your filter cartridges on a regular basis. If the water is discoloured or tastes strange change it immediately. It is often worthwhile to select a filter that indicates when the cartridge needs to be replaced.

Purification	Below is a basic guide on the options:
The clarity of water is not an indication of the safety to drink. If you are going to drink the water, you need to purify the water further by using a disinfectant. Your water sample should guide your research on the various options.	**Chlorine:** this is one of the most readily available and commonly used. You can use domestic bleach which contains between four and 6% Sodium Hypochlorite (which acts similar to chlorine) and other elements making it safe for use in the home. It is very important to ensure Sodium Hypochlorite is the only active ingredient listed and it should not contain any fragrances. Chlorine attaches itself to other chemicals in the water removing these and much of the pathogens, bacteria, taste, colour, odour and algae that should not be there.
	UV Treatment: UV light kills bacteria and other organisms. It is expensive to install and maintain but is the most effective way to purify water.
	Iodine: works the same way as chlorine
	Boiling the water: boil water for at least 15 minutes to kill disease-causing bacteria.

Final note: Keeping the bottles clean that you are storing the water in, in your home is just as important as filtration and purification. Use a bottle steriliser like those used for baby bottles.

Security FIX

When last did you replace your front door's night latch? Here's a handy step-by-step guide on how to get the job done... with minimal fuss.

>> Gina Hartoog

It's almost holiday time again, when security becomes a top priority. If your front door is fitted with an old night latch, you might consider making a replacement. Older locks may become weak over time and could jam.

For external doors (and a higher security level) make sure the lock you choose is a British Standard night latch. Double locking night latches are also preferable. They have a keyhole on the handle inside the door which can be deadlocked. Before you head off to purchase your new lock, check the measurement. They come in two sizes – 40mm and 60mm. Purchase the same size as the old lock.

If your front door doesn't have a night latch and you wish to fit a new one, you can follow these same instructions – just insert an extra step to drill out a hole for the cylinder using a hole saw. Most locks come with a template which you can use to line up with the edge of the door. Depending on the type of door, locate and make use of the 'lock block'. New locks must be fitted into this section.

Use a screwdriver to remove the old lock

Quick fix: Replacing a night latch

Tools and materials: screwdriver; hammer, sandpaper; small hacksaw, new night latch.

Step 1: Using a screwdriver, remove the old night latch. The cylinder will come out when the night latch is removed.

Step 2: Use sandpaper to remove any splinters that may be sticking up in the wood after you remove the old latch.

Step 3: Insert the new cylinder and ring from the outside of the door and place the new back plate on the inside of the door, connect the back plate with the cylinder using two connecting screws. Cut off the screws to the proper length relative to the door thickness – or use the old screws if they are still in good condition.

Step 4: Cut off the connecting bar (use a hacksaw on the guide groves) so that it projects about 10mm beyond the inside door.

Step 5: Place the lock on the door so that the connecting bar enters the slot. Using the punched holes as a guide, screw the lock to the door.

Step 6: Apply the strike to the door jamb slightly lower than the centre line of the lock to allow for any sag of the door. You may be able to use the old strike if the replacement night latch is similar.

Hot tip: If you've lost your keys, you won't need to replace the complete lock unit. You can purchase a new barrel (cylinder) and replace only this part without removing the internal mechanism and lock case.

Information courtesy of Yale Security, www.yalelock.co.za

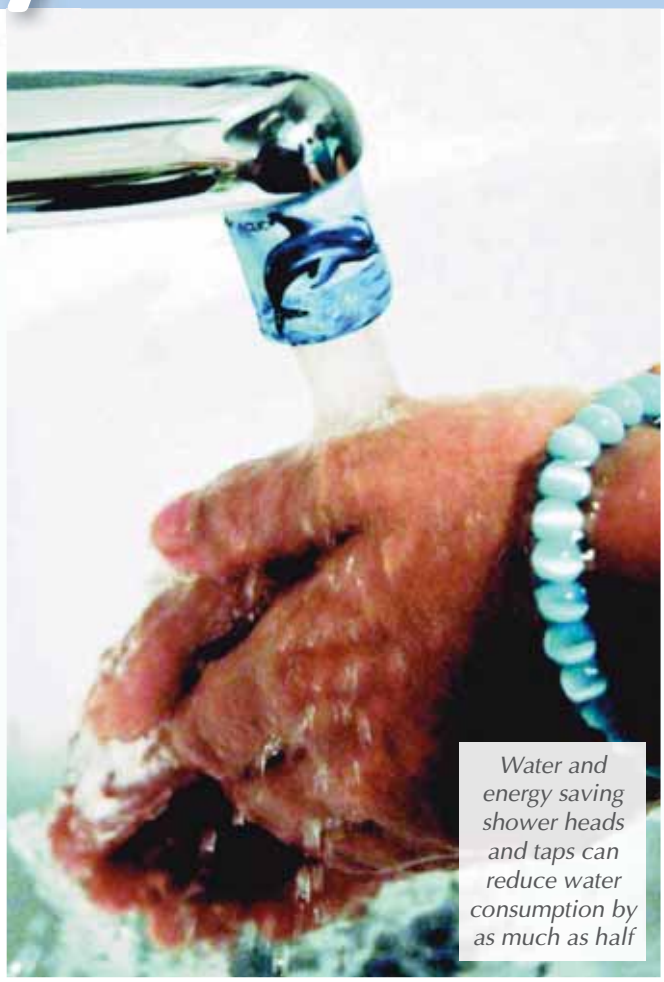
Give the area a light sand to remove debris and wood splinters

Insert the cylinder and attach the back plate

Once you've attached the lock on the inside door, fit the strike to the door jamb

Eco-friendly DIY

>> Gina Hartoog



Water and energy saving shower heads and taps can reduce water consumption by as much as half

Give your home a water wise makeover and start collecting rainwater today

Millions of litres of precious drinking water are wasted globally each year. The United Nations reported that the demand of water is increasing at twice the rate of the world population. All life on the planet needs water to live and grow yet only about 1% of the world's water resources can be used as drinking water. Climatologists estimate that in the next 20 years, South Africa's demand for water will exceed the supply.

Tackle those taps

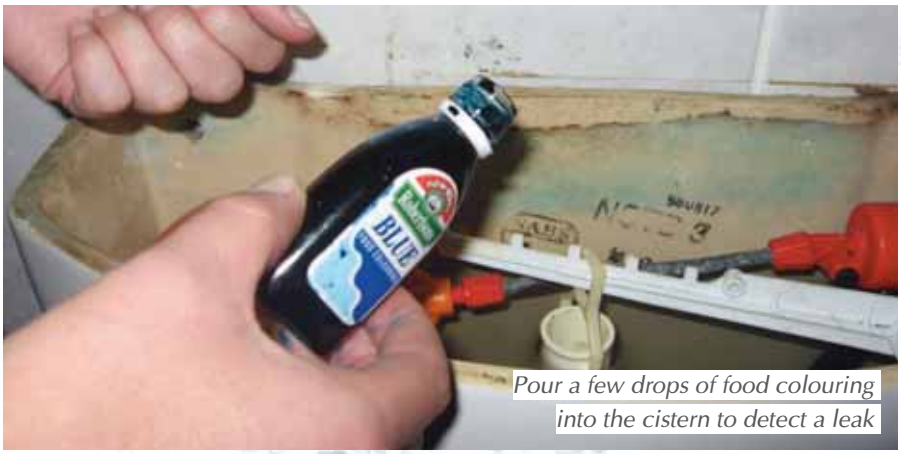
Just 10 drips of water from a tap each minute wastes hundreds of litres per month. Tap washers cost a few bucks and they only take a few minutes to replace. Remember to close the water mains before you begin and place a towel inside the basin to prevent scratches – and important bits from going down the drain.

A five minute shower uses far less water than a bath and even less if you fit pressure reducing shower heads and taps. These hot water savers can reduce water output by half, also decreasing the amount of energy needed to heat the water.

Don't fret when you flush

Toilets with older cisterns can use as much as 20 litres of water per flush. Our research suggests that the cost of installation may be offset by the water saved in six months. If you can't afford to replace the cistern with a smaller unit, place a brick or similar object in the cistern to displace water.

Your toilet could also be wasting water without you even knowing it and it's often a faulty flush mechanism that's the culprit. The leak drips from the cistern into the toilet bowl not on the floor, so it's tough to spot. Add a few drops of food colouring to the water in the cistern. Wait about half an hour, then check the toilet



Pour a few drops of food colouring into the cistern to detect a leak

bowl. Any sign of colour indicates a leak. Fix or replace the flush mechanism.

Pamper your pool

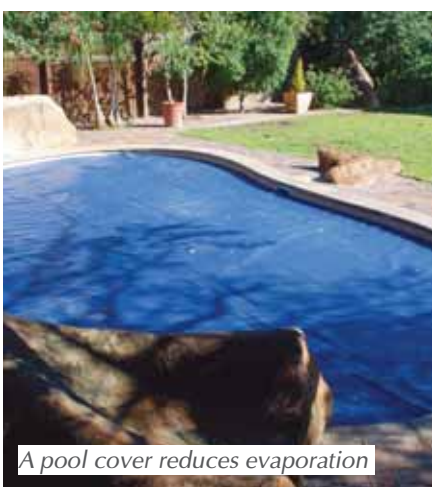
Swimming pools lose thousands of litres of water through evaporation. Pool blankets conserve energy and prevent water evaporation so you won't be turning on the garden hose every other day to top it up. It floats on the surface and helps inhibits algae growth, retains heat, reduces chemical consumption and reduces water evaporation! Keep in mind that pool blankets aren't safety devices.

Get a handle on that hose

You've probably read somewhere that using a bucket to wash your car saves water. Correct! The average household bucket uses five litres of water while your garden hose can pump out a staggering 20 litres per minute. Fit a water-saving trigger nozzle to your hose to save water when you must use it in the garden. Look for a product that allows you to cut the flow at the nozzle so you won't waste water in the time it takes you to walk back to turn off the tap. Repair or replace a hose with leaks.

Limit lawn space

Not only do lawns use hundreds of litres of water every year, lawnmowers use electricity or petrol to run. Reduce the size of your green lawn not only to save water but also reduce your carbon footprint. If you have a large lawn, consider removing part of it and replacing with a hard landscaping material or Astroturf. Attractive pebbles in various colours, small gravel stones, bark chips or paving can be used as alternatives to a green lawn. You can also replace large sections of lawn with water wise groundcover or other drought resistant plantings.


A pool cover reduces evaporation


Use pebbles and pavers to replace large areas of green lawn, which uses thousands of litres of water each year

Mark out a collection hole at the top of the barrel

Drill out the overflow hole at the side of the barrel

PVC piping angled to the side away from the barrel will direct overflow water away from your home's foundation

A tap at the base makes it easy to retrieve the harvested water

Harvest rainwater run-off

Construct a simple rain water barrel to harvest the water that comes down your drainpipes. You can use it to water your indoor plants, your vegetable garden or for any other outdoor work – just not as drinking water. Allow the first few rains of the season to wash off your roof, guttering and downpipes before you start harvesting. You should also periodically remove debris from your gutters and rinse the downpipes.

Install a rainwater tank step-by-step

Step 1: Mark the collection hole in the top of the drum. This should be about the size of your gutter's downpipe, but make sure it's big enough for you to get your hand inside to set the overflow pipe and connect the tap.

Step 2: Use a jigsaw to cut the hole.

Step 3: Mark out another hole about 40mm below the rim of the barrel. It should be the same diameter as the PVC pipe. This is for your overflow pipe during heavy rain. Drill out using a hole saw.

Step 4: Drill out a hole to size (according to your tap) about 25mm from the base of the barrel – but on the opposite side of the barrel where you placed the hole for the downpipe.

Step 5: Cut a 50mm section of PVC piping. Glue the straight coupling onto the cut pipe using PVC solvent-cement. Place into the barrel and push the pipe through the overflow hole.

Step 6: Fit the elbow flush against the barrel on the outside (trim the PVC piping if necessary). Seal in place with solvent-cement. Attach a long length of PVC to the elbow to direct overflow water away from your home's foundation.

Step 7: Fit the tap and lock in place with a lock nut and washer on the inside of the barrel.

Step 8: Measure and cut a cover for the barrel using the netting fabric. Ensure an overlap of at least 50mm. Stitch a seam into the bottom of the netting and thread elastic through. Slip the cover over the top of the barrel. The screen stops debris from getting into your barrel and will also prevents mosquitoes from breeding in the water.

Step 9: Place your rain barrel on bricks at the chosen downpipe, lining up the downpipe with the collection hole. Use a hacksaw to cut off the downpipe just a few millimetres above the collection hole.

Tools and materials

- Jigsaw
- Electric drill
- Hole saw
- 25-100 litre food grade plastic barrel
- Half a metre of fabric mosquito netting
- Needle and thread
- Thin elastic
- Length of 40mm PVC piping
- Straight coupling
- Elbow connector
- Tap and washer and lock nut
- PVC solvent-cement
- Length of flexible downpipe (if required).

TIP

If you can't get your downpipe to line up with your collection hole, purchase a section of flexible downpipe and angle it down. You can also link two or more barrels by making a second hole at the bottom of each barrel and joining them with a length of PVC pipe.

TYRE TALK

When it comes to tyre care, a solution is to inflate your tyres with nitrogen, rather than air. If this concept is new to you, then relax and know that it's a tried and tested practice that has been used for decades to inflate race car tyres as well as aircraft tyres, those on the US space shuttles and on industrial vehicles.

Joe du Plooy, marketing executive at Tiger Wheel & Tyre, explains the benefits of inflating with nitrogen, "The two most noteworthy benefits are a slower rate of pressure loss and a significantly cooler running temperature for the tyres. As a result, you need to inflate your tyres less frequently and the tread lasts up to 20 percent longer than tyres inflated with ordinary compressed air."

The reason tyres stay better inflated for longer is due to the molecular structure of nitrogen, whose larger molecules escape through the tyre at a slower rate than regular compressed air – much slower, in fact. Consider that it can take up to six months for a nitrogen-inflated tyre to lose 0.14kpa, whereas one filled with compressed air could lose that much in a month.

The fact that your tyres run at a lower temperature with nitrogen not only impacts performance and safety in your daily driving, but also has a long-term effect on your pocket.

When tyres get hot, as they do whenever you drive and particularly in summer, the air pressure increases. This causes the tyre to expand and its footprint – the area that is in contact with the road – to be smaller. With so much less surface area in contact with the road, you can expect accelerated and uneven tread wear and that your tyres will more easily lose grip.

By inflating with nitrogen your tyres will run much cooler, giving them a larger footprint, which improves vehicle handling and preserves the tread on the tyres, giving your tyres up to 20 percent longer life.

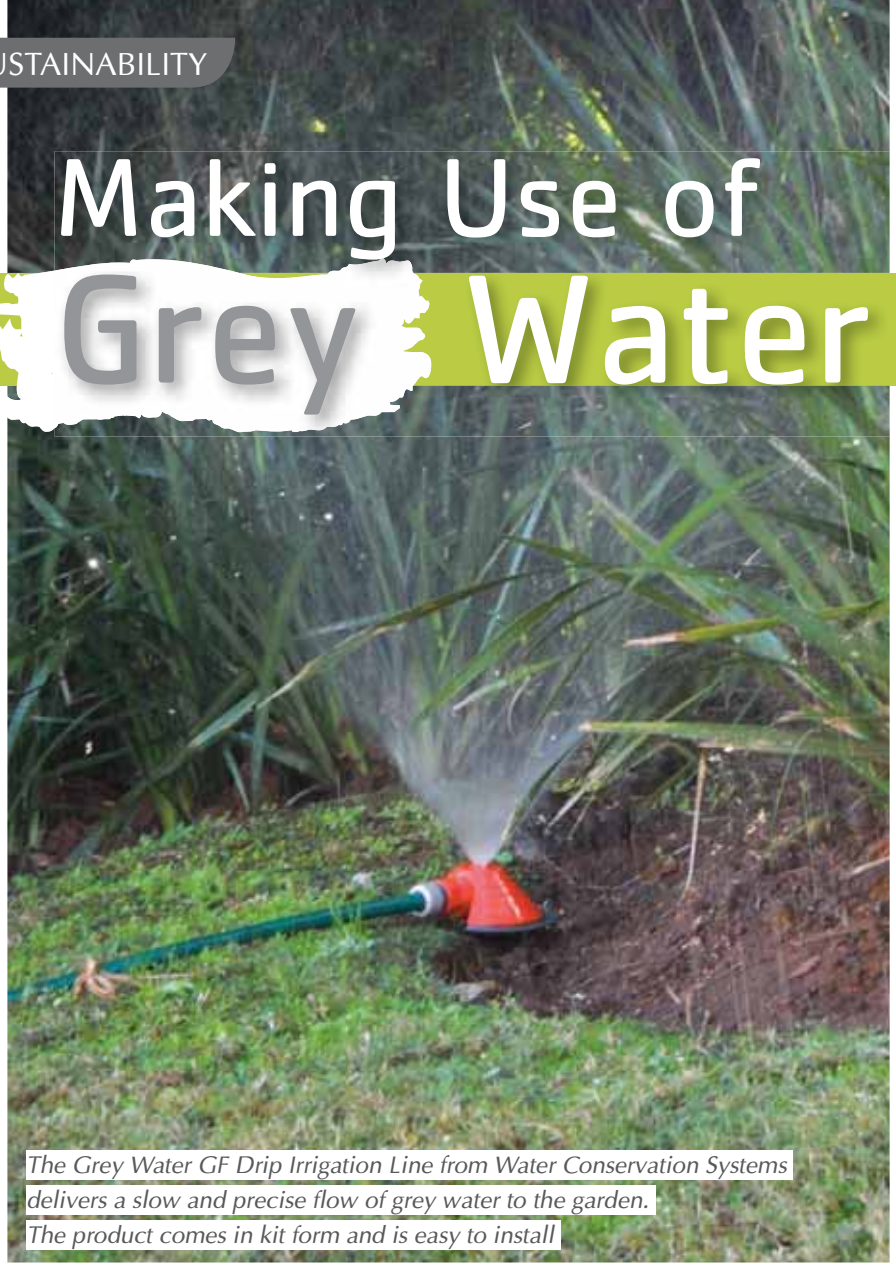
In addition to these already compelling reasons to inflate with nitrogen, there's the fact that compressed air contains water vapour, which accelerates rust, corrosion and damage to tyre valves, the metal components of your tyres and to your wheels. Nitrogen, on the other hand, contains very little water vapour by comparison.

Finally, let's dispel some myths about nitrogen. There are some gross misconceptions about the safety of nitrogen in tyres, but all are due to simple misunderstanding. The nitrogen we're talking about is the inert gas, which comprises 78 percent of the air we breathe. It is 100 percent safe and is not only non-combustible, but actually extinguishes flames. So don't confuse it with liquid nitrogen, which is a refrigerant and definitely not nitrous oxide or 'nitrous' used by speed freaks to make their cars go faster.

If improved performance, better handling and longer lasting tyres are your goal, then it's time you switched to nitrogen. Nitrogen inflation is available at all Tiger Wheel & Tyre stores for a nominal fee and once you've inflated the first time, subsequent top-ups are free of charge for the life of the tyre. If you're off the beaten path and need to top up urgently, you can safely add compressed air to your tyres and simply return to inflating with nitrogen when it's convenient.
Source: Tiger Wheel & Tyre.

Making Use of Grey Water

>> Gina Hartoog



The Grey Water GF Drip Irrigation Line from Water Conservation Systems delivers a slow and precise flow of grey water to the garden. The product comes in kit form and is easy to install

Every day you flush hundreds of litres of water down the drain when some of it can be reused to water the garden.

Any water that has been used for washing – whether in the bath, shower, basin or the washing machine – is called grey water. This water may be reused to water plants and grass in your garden, or even to wash your car. In professionally plumbed applications, grey water can be used to flush toilets. Toilet water, called black water, should not be recycled.

The best thing about grey water harvesting is that helps you save valuable potable water as well as the more user friendly water stored in your rainwater tank. As long as there is water going down the drain, there is grey water and it does not depend on the weather – well not entirely.

Why recycle grey water?

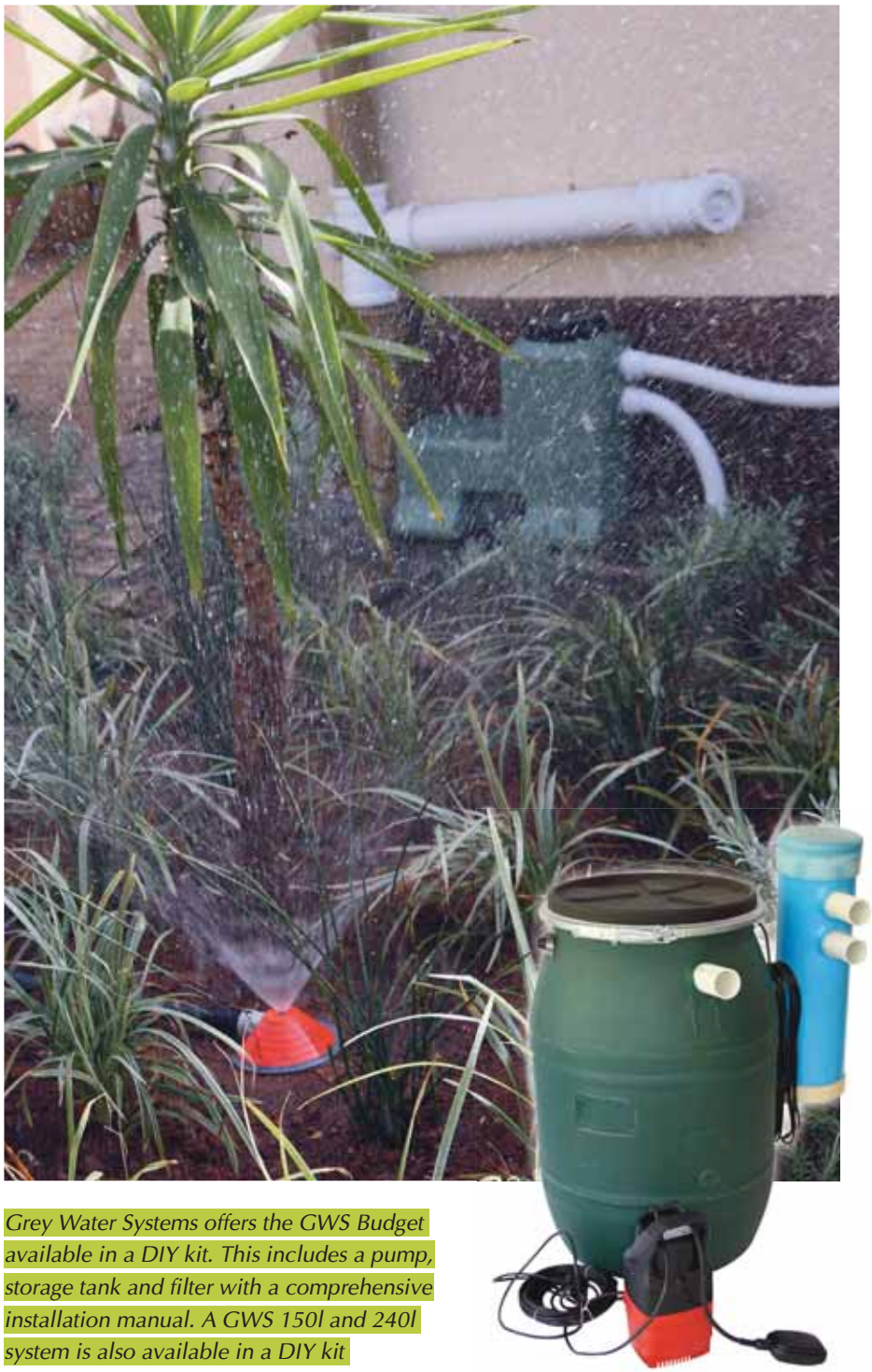
The average household of four in South Africa flushes away around 250 litres of water per day. This means we use more than the global average, never mind being one of the most water stressed countries. A higher than average rainfall across the country over the past few years has lead to complacency on the past of government and homeowners. The truth is that if you live in a major city you are vulnerable to drought.

In homes, most of our water usage goes to flushing toilets and taking a bath or shower. In households with gardens, as much as 50% of water usage goes to irrigation. Reusing grey water in the home is just one of many ways you can live a more sustainable lifestyle. Owner of Water Conservation Systems, Marc Yoko says, "Many areas have water restrictions, so it is essential that we conserve the water we have. The

Reuse to water plants and grass in your garden, or even to wash your car

population is growing at a rapid rate, which is putting further pressure on our already limited water supply. We can live without electricity, but we cannot live without water."

Besides saving you money on municipal water usage, using grey water responsibly and correctly has numerous benefits. "You can have a green garden all year around. It also enables gardens to flourish in areas where water may not otherwise be used for gardens," says Mark. As such you will also be able to water your garden during periods of drought or water restrictions. Grey water also contains certain nutrients like phosphorous and nitrogen, which can be beneficial to plants.



Grey Water Systems offers the GWS Budget available in a DIY kit. This includes a pump, storage tank and filter with a comprehensive installation manual. A GWS 150l and 240l system is also available in a DIY kit

Guidelines for using grey water

- Never store grey water for longer than 24 hours.
- Choose biodegradable and environmentally friendly personal hygiene and cleaning products (those used to clean the bath and basin) to prevent a build-up of salts in the soil.
- Never re-use water from your kitchen sink or dishwasher.
- If you wash cloth baby nappies in your washing machine, divert the water to the sewer.

You should also do this when using chemicals like hair dye or bleach and if someone in the household is sick.

- Allow grey water to cool in the tank before irrigating the garden. Hot water can kill off beneficial organisms in the soil.
- Water your plants with 'fresh' water once a month.
- Never allow anyone in your home, including pets, to drink grey water.
- Grey water shouldn't be allowed to pool on or run off paving – make sure it soaks directly into the soil.
- Don't overwater plants just because you have the water. If there has been a lot of rain, divert the grey water to the sewer.
- Maintain your system properly and clean the filters regularly.
- Don't mix grey water with any harvested rainwater.

Pool sediment tanks

Do you have a swimming pool? How much water are you wasting every time you backwash your pool? Mike Bekink of Grey Water Systems says that about an average of about 150l is lost during each backwash and rinse cycle.

You can save your backwash water! "It's a simple way to save water and pool chemicals or salt," says Mike. "You will need a 200 to 300l tank to backwash the pool into. The water should then be allowed to settle in the tank and all the sediment will settle at the bottom over a few days. The water is then drained by a gravity feed back into the pool and the chemicals, or salt and water can be re-used."

Start using grey water today

The easiest way to utilise grey water in your garden is to manually use a bucket to remove water from your bath or shower and use it to water the garden.

As long as grey water is utilised responsibly and correctly, it is safe. The golden rule of effective grey water management is to reuse the waste water within 24 hours. Mike Bekink of Grey Water Systems says, "Most of the concerns about grey water are to do with the hygiene aspect and odours of the water, but both these aspects are eliminated if the water is reused as soon as possible and bacteria has not been given time to produce."

The best quality grey water comes from your bath and shower. Mike says, "A small unit that uses the waste water as the bath or shower water flows through the drain is the ideal unit for townhouses, clusters and small developments." Some of these units are designed to be fitted DIY without much hassle and with some creativity you may be able to make your own less complicated system.

The GF Drip Irrigation Line kit is designed for use with Water Conservation Systems' G-Flow and Grey Flow grey water systems

Alternatively, waste water can be collected in an underground tank. The water is then filtered and a pump is attached to an irrigation system, which directs water into the garden. The last option is a central tank, which draws water from numerous units to one tank.

"This means that each unit requires a collection tank and a pump to pump the water to the central tank," explains Mike.

"It is filtered and treated with an aerator and a biological additive, or with UV to sterilise the water. The water is then pumped through a time controlled system into an irrigation system. The only advantage of this system is that the watering times are controlled. Cost implications make this system more viable in larger developments."

Choosing a system

Consider your needs and what the system has to offer before you make final decision on a product. The system you choose will also be determined by the size of your garden and the number of people in your household. Things to consider are; an overflow pipe or valve, which enables you to divert water back into the sewer during periods of heavy rain, when harmful chemicals have been used in the water or during periods of illness. A filter is used to remove solid waste like soap, lint and hair from the water before it is distributed. Once you have decided on a grey water system, make sure yours complies with local law, understand how it works and what maintenance is required.

Sources

Water Wise, www.waterwise.co.za
Water Conservation Systems, www.watercon.co.za
Grey Water Systems, www.greywater.co.za.
Waterwise estimates that gardening accounts for between 31 and 50% of a home's total use

Weld with confidence

Arc welding is an interesting and challenging hobby, or trade, but a vital part of perfecting the skill of arc welding is safety. We provide you with a few pointers to ensure your welding experience is a safe one.

The first step to ensuring welding safety is to check that your equipment is in good condition before starting any project. Next, be aware of the environment in which you are going to work. Avoid being in an enclosed area as welding may produce fumes and gases hazardous to your health. To avoid breathing in these gases, ensure adequate ventilation to keep fumes and gases away from the breathing zone. Equipment and cables should be correctly insulated to avoid dangers of electric shock. Always ground equipment and place it on an independent circuit with the correct sized circuit breaker. Overloading circuits or improper installation can lead to fire, a ground fault or equipment failure. Mount a safety disconnect switch near your work area.

Another aspect to be considered is your surroundings. Welding sparks can cause fire or explosions, so remove fire hazards from the welding area and have a fire extinguisher readily available. Welding sparks and hot materials from the welding process can easily travel through small cracks and openings into adjacent areas. Do not weld on any tanks, drums, containers or material until you have taken the proper steps to ensure that no flammable or toxic vapours will be present. Never operate your equipment when flammable gases, vapours or liquid combustibles are present.

As a precaution against electric shock from arc welding, use an insulating mat when you weld steel or other conductive materials. If you are welding in a wet or damp area or perspiring heavily, wear rubber gloves underneath your leather gloves. Keep welding cables clean and intact and position them so they do not get sparks or hot metal on them.

Gear up for welding

Now that you are sure your equipment is ready and the environment safe, it is time to protect yourself.

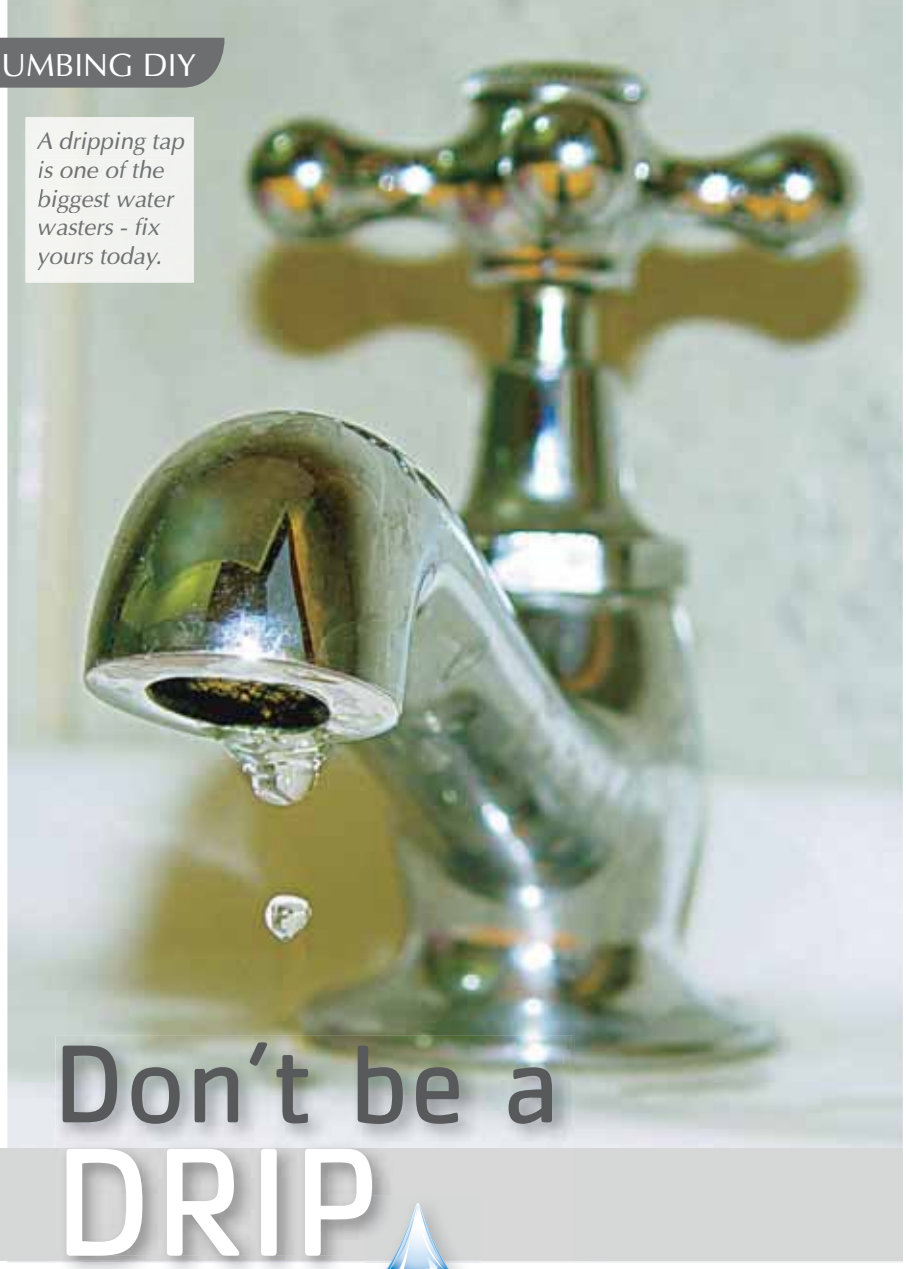
Start with a welding helmet or mask to shield against visible and also ultraviolet radiation, which is dangerous to the eyes, especially in all visible arc processes, but can also cause burns on unprotected skin. Welding helmets are available with fixed or flipable dark windows, or with automatically darkening light screens. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing. Welding helmets and shields should be non-reflective and free of cracks and openings. Also use the correct filter setting for the power output of the arc welder.

While welding, to protect your body from burns due to arc welding heat, ultraviolet light, molten metal and sparks, use suitable clothing made from durable, flame resistant material. Wear dark coloured overalls with long sleeves and pant legs. The overalls should have no cuffs and pockets, and no holes, tears or worn spots.

Wear welding gloves to protect you from electric shock, flames, hot parts, sharp or flying metal and arc rays, and a skull cap to protect your head and hair.

WARN OTHERS

Always warn other people not to watch the arc nor expose themselves to the arc when welding.



A dripping tap is one of the biggest water wasters - fix yours today.

Don't be a DRIP

Despite being a simple job, fixing a dripping tap is often relegated down the list of to dos. It's easy to underestimate the importance of keeping your taps in tip top condition. There are a few reasons why a tap may be leaking tap but a worn washer is by far the most common cause. You don't need a licence to change a tap washer – it can be done by just about anyone and all you need are a few basic DIY tools you already have.

A tap washer is essential in controlling the flow of water coming through the spout. If the washer is damaged or worn, water will rush past the jumper valve seat, even when the tap is closed. If the tap is open, but water is leaking below the head, it is likely that the body washer or O-ring need replacing. In this case a service kit including a spindle washer and o-ring should be purchased for your tap. In extraordinary cases the valve seat inside the body of the tap may have been damaged. This is particularly common in areas where a high amount of lime content in the water grinds into the seat over time.

Note: If a tap drips or needs to be tightened more than others like it, its washer may be on the way out.

Fix your leaking tap step-by-step

Step 1: There are three washers that can cause a tap to drip; the O-ring, the body or spindle washer and the jumper valve washer. Sometimes it's not easy to find out which is the problem and you will have to change each one until the problem goes away. These come in standard sizes, but to be sure that your replacement is correct, take the worn washer parts along to your local hardware.

Step 2: Remember to turn off the water stopcock, under counter shutoff valve, supplying the tap in question. Not all homes or taps have a stopcock supplying it, if not you will have to switch off at the mains. Your incoming water main may be inside your yard, close to your boundary wall, or on your pavement adjacent to the street.

Step 3: With the main water supply closed, open the tap that requires attention allowing time for the water to drain from the pipe work. When the water stops running, replace the plug to prevent parts slipping down the drain.

Step 4: Remove the tap's handle. There are various types; on some taps you will find the handle release screw just below the handle, or in some instances, the screw will be hidden underneath the hot or cold water indicator cap.

Step 5: When the handle is off you will notice the spindle shrouded by a metal dome cover, unscrew it by

hand if possible or carefully loosen with a wrench. A cloth can be placed around the cover to protect it from getting scratched.

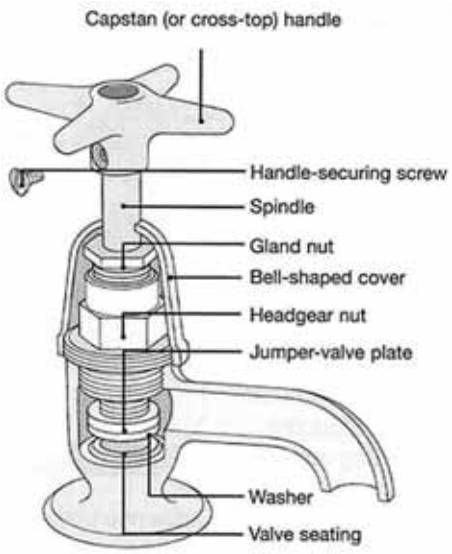
Step 6: Next, remove the entire headgear by turning the largest nut anti-clockwise with an adjustable spanner or wrench. Here you will find the tap assembly which contains spindle washer, O-ring and the jumper valve and washer. Handle the headgear carefully to avoid the jumper valve coming adrift.

Step 7: Replace the spindle washer (if necessary), O-ring and jumper valve washer.

Step 8: Before you put everything back together, open the spindle to its fully open position if you closed it after clearing water from the line earlier on. This will prevent the washer being pressed against the valve seat when the headgear is screwed back on.

Step 9: Thoroughly clean out the inside of the tap and especially the threads using steel wool - not doing so may results in leaks.

Step 10: Leave the tap open when re-commissioning the water supply to clear away any debris that may have been dislodged in the pipe work. Finally and most importantly check for any leaks.



Anatomy of a tap

If your tap continues to leak after a washer kit install, the valve seat may be damaged

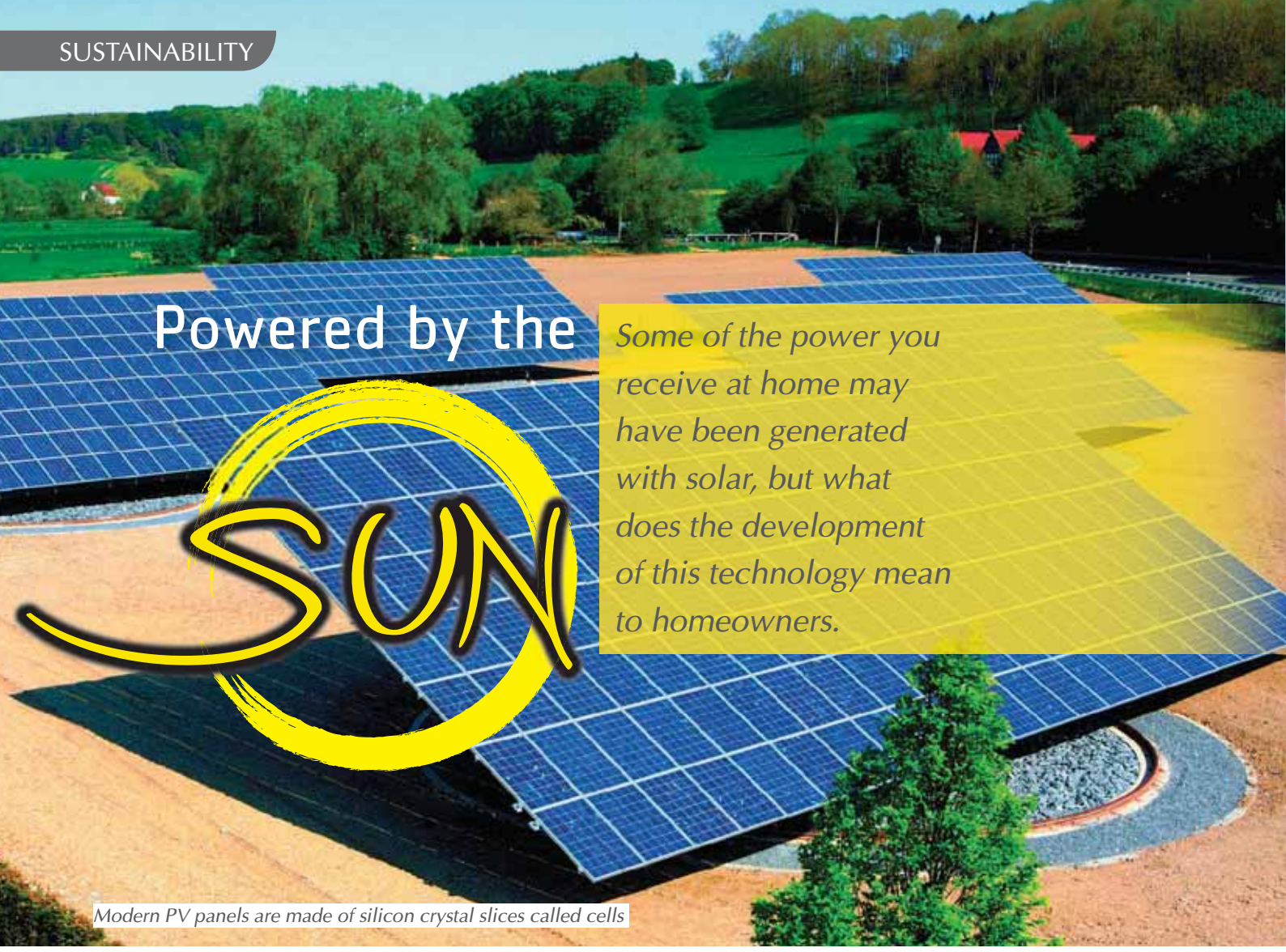
This spindle needs to be replaced because it was over tightened and only three or four undamaged threads remain

TIP

Don't over tighten your taps after use as this may damage the jumper valve washer and valve seat.

Powered by the SUN

Some of the power you receive at home may have been generated with solar, but what does the development of this technology mean to homeowners.



Modern PV panels are made of silicon crystal slices called cells

>> Gareth Greathead

Photovoltaic (PV) solar panels collect and convert sunlight into direct current (DC) which is stored in batteries ready for use later on. This is unlike solar thermal panels which collect sunlight and turn it into heat to provide your home with hot water. In fact, PV panels work better in winter, or when there is adequate ventilation to keep them cool.

Introducing PV solar

To understand how photovoltaic cells work you will have to think back to basic science at school and the structure of the atom. Atoms provide the basic building blocks for all matter that exists in the world. Each atom has a nucleus in the middle; it is made up of a bundle of neutrons and protons, which carry a positive charge. Surrounding the nucleus are negatively charged electrons. In certain semiconductor materials the electrons are loosely attached and able to move from one atom to the next creating an electric current in the process.

There are three basic components to every PV system:

Modern PV panels are made of silicon crystal slices called cells, the cells are arranged to have a negative on one end and positive on the other. The cells must be protected from the environment and are normally packed behind a reflective sheet of glass. When sunlight strikes the solar cell, electrons are knocked loose from the atoms in the semiconductor. The current provided by each cell is collected and sent to terminals on the panel. When conductors are attached the power may be used directly to power a load, as a 12V light.

A number of panels (an array) may be connected in series or parallel to achieve the desired voltage. In the scenario described above the power produced must be utilised immediately or it will be lost. Since nothing in your home uses 12V DC (direct current), an inverter must be used to step up the voltage to 220V AC (alternating current). At the same time a charger and batteries are connected to store the power for use later on. These components must be sized correctly in order to be safe and cost effective.

While it is possible to rewire and convert your home to run on PV solar alone, this scale of set up is out of reach of most. Spokesperson of sustainable energy importer Sungrid, Paul Lombard says,

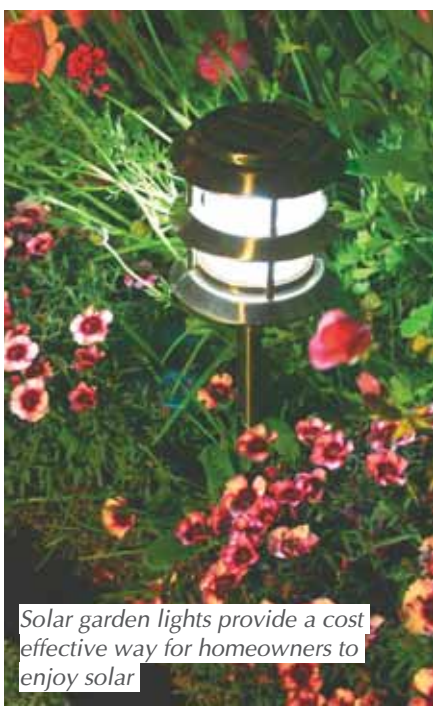
A concept glider showing what can be done with PV technology

"For many, the concept of PV solar brings to mind large, expensive, complicated systems which require professional installation. Also, understanding energy related terms like Watts, Amps and Megawatts and other scientific measurements and variables are difficult."

How to get started

Instead domestic PV solar systems come in a variety of scales and enable homeowners to supplement their electricity bill. Paul says homeowners will benefit from practical experimentation with portable, plug-n-play PV solar systems more than anything else. Being portable homeowners are able to experiment by altering the positioning of the collector in relation to the sun, seasonal changes and weather patterns. "It takes practice to become efficient at collecting the most energy per day that is possible.

Simple to use portable systems are cost effective and people become familiar with the working of the system, types of batteries and the potential of solar panels in an easy, fun and independent way. Our goal is to provide cost effective solutions allowing everyone the opportunity to access sustainable power generating technology."



Solar garden lights provide a cost effective way for homeowners to enjoy solar

Solar energy can provide energy where there are no cables

contd on p34

The solar charge controller receives and manages power coming from the PV panels

Deep cycle batteries store energy for use later on

Power from the batteries must go through an inverter to convert it from DC to AC

A portable PV solar kit enables you to charge cell phones and plug in LEDs

makita

18V LITHIUM-ION

LXT LITHIUM-ION

METAL CUTTER
DCS551Z

BISCUIT JOINER
DPJ180ZJ

TRIMMER
DRT50ZJ
DRT50ZJX2

CIRCULAR SAW
DHS680ZJ
DSS610ZK

CONCRETE VIBRATOR
DVR450Z

HEDGE TRIMMER
DUH523Z

GRASS TRIMMER
DUR181Z
DUR187LZ

GRASS SHEAR
DUM168Z

ADAPTOR FOR USB
ADP05

JOB SITE RADIO
DMR102

RECIPRO SAW
DJR360ZK

CIRCULAR SAW
DHS710Z

PLUNGE CUT CIRCULAR SAW
DSP600J

ROTARY HAMMER
DHR263ZK

ANGLE GRINDER
DGA900ZK

LED FLASHLIGHT
DML800
DML801
DML802
DML807

SLIDE COMPOUND MITRE SAW
DLS714Z

LED WORKLIGHT
DML805

CHAIN SAW
DUC302Z
DUC400Z

18V X2 36V

PLANER
DKP180Z

LAWN MOWER
DLM380DZ
DLM431Z

HEDGE TRIMMER
DUH651Z

RANDOM ORBIT SANDER
DBO180Z

GRASS TRIMMER
DUR364LZ
DUR365UZ

MULTI TOOL
DTM50Z

BLOWER
DUB361Z
DUB362Z

VACUUM CLEANER
DVC860Z
DVC862LZ

AUTO FEED SCREWDRIVER
DFR550ZJ

BACKPACK VACUUM CLEANER
DVC260Z

SCREWDRIVER
DFS250ZJ
DFS251ZJ
DFS452ZJ

Batteries and chargers sold separately

Tools are not supplied with drill bits, discs, etc.

IMPACT WRENCH
DTW190ZK DTW450ZK
DTW251ZK DTW1001ZJ
DTW285ZK DTW1002ZJ

DRIVER DRILLS
DDF083Z DDF483ZJ
DDF481ZJ DDF484ZJ

IMPACT DRIVER DRILL
DHP453ZK DHP482ZJ
DHP458ZK DHP483ZJ
DHP459Z DHP484ZJ
DHP481ZK

IMPACT DRIVER
DTD129ZK DTD154Z
DTD152Z DTD155ZJ
DTD153ZJ DTD170ZJ

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Continuous Innovation

We are expanding our range providing the customer with more choice than ever before.
All our 18V models use the same battery platform.

BLOWER
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DUB183Z

CLEANER
DLC180Z

ROBOTIC CLEANER
DRC200Z

DUST EXTRACTOR
DVC350Z

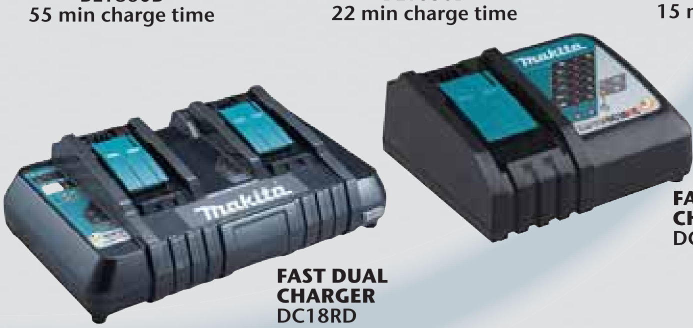
CAULKING GUN
DCG180ZK

5.0Ah
BL1850B
45 min charge time

6.0Ah BATTERY
BL1860B
55 min charge time

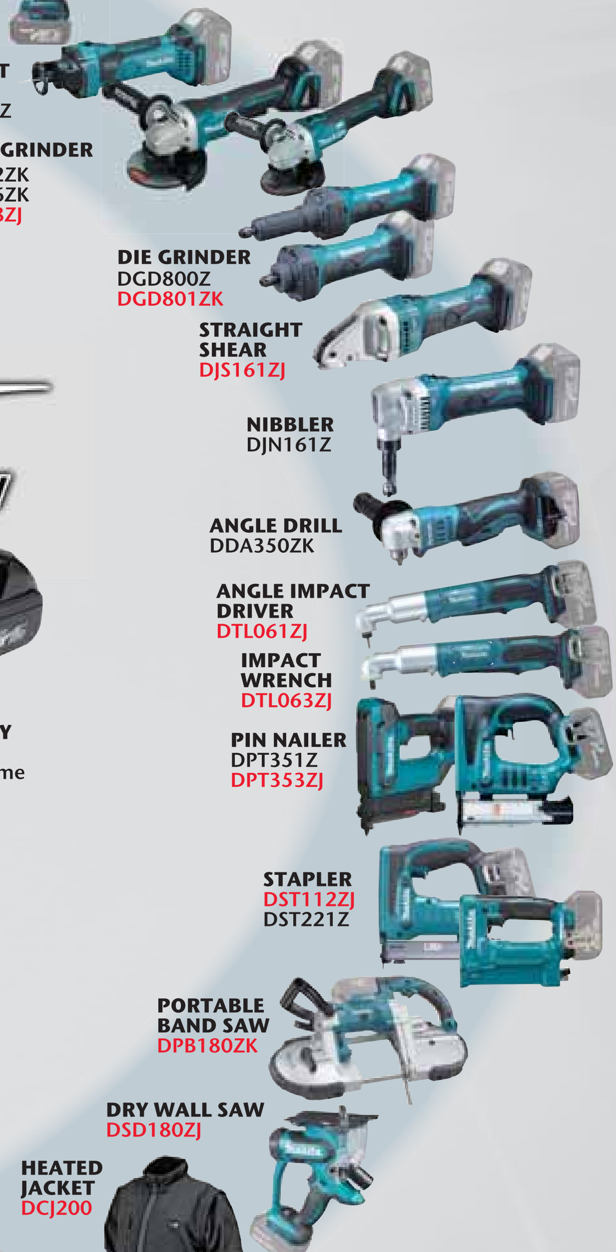
3.0Ah BATTERY
BL1830B
22 min charge time

1.5Ah BATTERY
BL1815N
15 min charge time



FAST CHARGER
DC18RC

FAST DUAL CHARGER
DC18RD



CUT-OUT TOOL
DCO180Z

ANGLE GRINDER
DGA452ZK
DGA456ZK
DGA458ZJ

DIE GRINDER
DGD800Z
DGD801ZK

STRAIGHT SHEAR
DJS161ZJ

NIBBLER
DJN161Z

ANGLE DRILL
DDA350ZK

ANGLE IMPACT DRIVER
DTL061ZJ

IMPACT WRENCH
DTL063ZJ

PIN NAILER
DPT351Z
DPT353ZJ

STAPLER
DST112ZJ
DST221Z

PORTABLE BAND SAW
DPB180ZK

DRY WALL SAW
DSD180ZJ

HEATED JACKET
DCJ200

JIG SAW
DJV180ZK
DJV181ZJ
DJV182ZK

RECIPRO SAW
DJR183Z
DJR186ZK
DJR187ZK

ROTARY HAMMER
DHR165ZK
DHR202ZK
DHR242ZJ

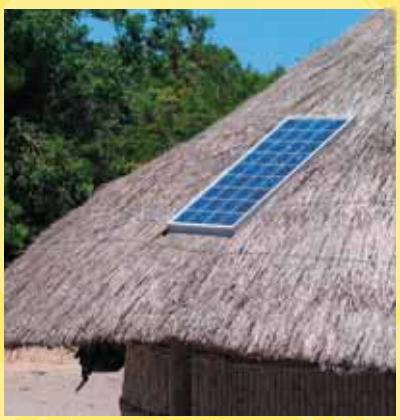
OIL-PULSE DRIVER
DTS141ZJ

90+ TOOLS

Limited stock available - Orders placed on demand

contd from p31

Solar garden light



Solar panels

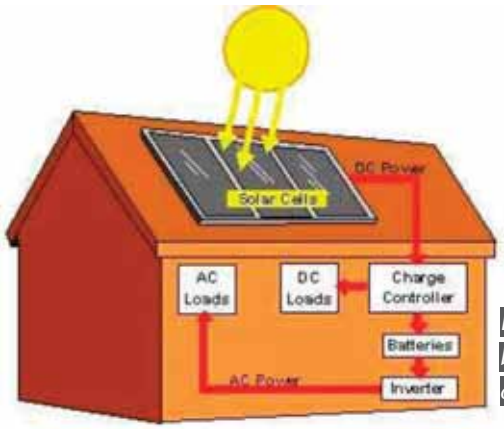


Diagram showing basic components of a solar PV system

A meaning saving for all

Although small, portable systems have the power to supplement your energy needs. "Just consider what it takes to charge your cell phones, let's say R5 a day, or R35 per week per person. If you charge three cell phones daily this equates to as much as R1260 a year. Paul says, a 1500 Watt plug and play unit costs around of R23 000. This will power an entertainment system, television, decoder and surround sound and with some lighting every night.

Depending on what you get it may only take a couple of years for the system to pay for itself with money saved on your energy bill. After that it will be several years before batteries need to be replaced and this is free energy." The solar panels, inverters and transformers will continue to function for between 20 to 25 years before needing to be inspected.

PV solar 20 years from now

Like all new technology the money spent by companies on cost of research and development has to be recuperated and the cost is passed onto the consumer. As PV solar technology develops and becomes widely used the price will come down making larger domestic systems more affordable for homeowners. Paul says, "Solar technology is continuously improving as the world's focus shifts more towards renewable energy and therefore the payback period is reducing over the long term. For example, the cost of solar panels is coming down while efficiencies are going up." Also, advancements in battery technology are allowing these units to be used for longer periods of time before needing replacement, which further reduces the running costs.

"Before 2020, we anticipate that almost 50% to 60% of households in South Africa will have some sort of solar product. The use of sustainable energy products will grow as the awareness and trust in the advancements of solar technology continues to improve. Solar products are not just a load shedding solution, but a chance for people to access clean, free power on a daily basis to improve their lives while also reducing living expenses."

Boskoors Adventure Camp

01 - 07 April 2018

We at BosKoors are inviting all avid young anglers between the ages of 7-16 years to join us for loads of fun and adventure.

Venue: Boskoors Farm, 30km North of Pretoria on the Moloto Road.

Bookings are essential!

We have limited spots available as we like to keep the number of campers at a minimum, to ensure that every child gets the necessary individual attention and guidance.

Please call Wilma on 065 849 3264 or 083 306 2718 to book your spot. For more information visit www.sabass.com or e-mail wilma@sabass.com

BRIGHT IDEAS

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

Remote storage stand

Today, virtually all electronic equipment is supplied with a remote control unit. These units tend to accumulate in a pile on the coffee table, and often cannot be found when needed. This leads to possible damage. I have a remote for my TV, video machine, CD player and DVD player.

While rearranging my lounge, I decided to construct some form of easily accessible storage for my remotes. Looking through my stash of offcuts, I came up with the following design. As I build quite a few kitchen cupboards, I have offcuts of melamine, both white and wood grain varieties.

The base is dimensioned to take all the available controls. Spacers were made from scraps of plastic drawer runners that were originally destined for the rubbish bin, as they were too short for anything useful. I edged the base and retainer strip with white iron on edging and fitted rubber feet to prevent scratching the coffee table and to give some grip. After assembly, white pozicaps were glued with PVA wood glue to all exposed screw heads. Any small chips and blemishes in the timber were filled with wood filler, and sanded when dry.

Dimensions will vary according to the remotes you own. Solid timber can also be used, and stained or varnished to match existing décor. I allowed the thickness of two business cards' clearance between the spacers and remote controls.

Now I can find and use my remote controls easily. As an unexpected bonus, my TV remote 'talks' to the TV while parked in the stand. This is due to the angle at which the stand is inclined, determined by the thickness of the rubber screw-on feet. This is an ideal quick weekend project, using scraps and offcuts. If all materials are purchased new, the cost should be less than R50.

John Norman, by email

Dripping tap

Listening to the drip drip of a leaking tap or showerhead whilst trying to fall asleep can drive you insane. A simple temporary solution is to attach a rope or thick string from the leaking tap or shower, which allows the water to drip onto the rope and silently run down into the drain.

Mike Small, Kimberley

Bolt solution

In the past I have had so much trouble trying to fix rawl bolts properly that I gave up on them completely. They are expensive and always come loose eventually. To overcome the problem, I came up with a solution of my own. I must admit that I've heard about this before, but have never met someone who knows about this or has at least tried it.

Buy a suitable size bolt, then use a masonry drill bit that's the same size as the head of the bolt. Now, drill a hole into the wall, halfway the length of the bolt and insert the bolt the wrong way around (No, it's not a print error, put it in the wrong way around!)

Now mix cement and plaster sand to a nice paste. Close the open area surrounding the bolt with the cement and give it a few days to dry properly. Just make sure you wipe away the cement from the bolt's thread. You can now use it for whatever you planned. My satellite dish is fixed this way on the side of my house and is still hanging perfectly four years on.

Pieter Steenkamp, Bloemfontein

Water proof connectors

Recently I replaced a few outdoor lights to power saving LEDs. I found the round 2-way box to be a little intrusive as it sticks out on the wall of the house. I decided to make my own waterproof enclosure. I utilised 20mm compression glands and a straight 20mm union. For the electrical connection I used 1.5mm flat twin cable. Ferals were used to crimp the cable that was part of the new light fitting which was then insulated with insulation tape. I then used a small amount of clear silicon to glue the fittings to one another before tightening the compression glands to ensure a waterproof seal. I could have used PVC glue to join the glands and union but decided against this in case I need to open the joint at some stage. The cost to make these waterproof joints was less than R10 and they look good against the house wall.

Brian Parker, Linmeyer

Sharp as ever

Use your bench grinder to sharpen the old used blades of your Stanley knife. This is the one with the big screw in the middle. I have been able to sharpen the used blades up to five times. The old blades are also good to use as paint scrapers.

Leslie Irwin, by email

No more binding screws

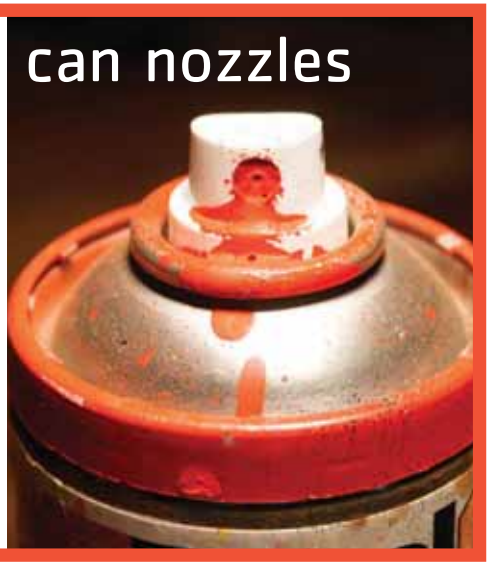
If there is any chance of the screw binding in the wood, my late father-in-law taught me to pull the thread across a slightly wet piece of Sunlight soap bar. Of late, I prefer to use a piece of beeswax in the same way. You would be surprised as to how much this aids the entry of the screw without diminishing its holding power.

Pierre le Roux, Bellville

Unclog spray can nozzles

How often do you reach for your spray can only to find the nozzle is clogged? The easiest way to unclog the nozzle is to remove it and place it on a can of WD-40, which generally fits. One quick squirt should clean it out! Replace the nozzle and it will spray like new. Another quick fix is to remove the nozzle and rinse it in thinners and replace it. The container should be stored upside down only.

Kyle Danielson, Benmore



Carving out success

After renovating his mother's house Frans Setshedi sets his sights on a change of career

>> Samantha Greathead

Frans Setshedi started his woodworking journey after renovating his mother's house. The finished product, particularly the items made out of wood, inspired a change of career. He started, Creative Tables, manufacturing wooden tables. "I worked with various materials in my mother's house but it was the wood that I fell in love with. I never thought my Friday afternoon woodworking class in high school could lead to this."

The passion

What drew Setshedi to working with wood is the warmth of the material. "There are different grains and types which all transfer warmth to the home. My favourite is kiaat wood. It is unique in that isn't a standard shade unlike many other woods," says Setshedi.

It is difficult to pin point just one person in the industry as Setshedi's inspiration. "While I do draw inspiration from the many successful people in the industry, I'm also self-motivated. A large part of my inspiration comes from the dynamic and ever-changing environment around me. I draw inspiration from all the different places I find myself."

While Setshedi has only been practicing woodwork professionally for three years, everyday he learns something new. "The wood industry was much bigger than I ever imagined it was. It evolves everyday with new techniques and tools developing. This also allows me to constantly sharpen my skills."

Turning passion into a business

Setshedi used this appreciation of the industry to start his business. "I combine my passion and understanding to create bespoke products. The furniture I create is designed specially to fit into a certain home. People can order their furniture exactly as they want it. Any house, style or absolutely anything they want, they can get."

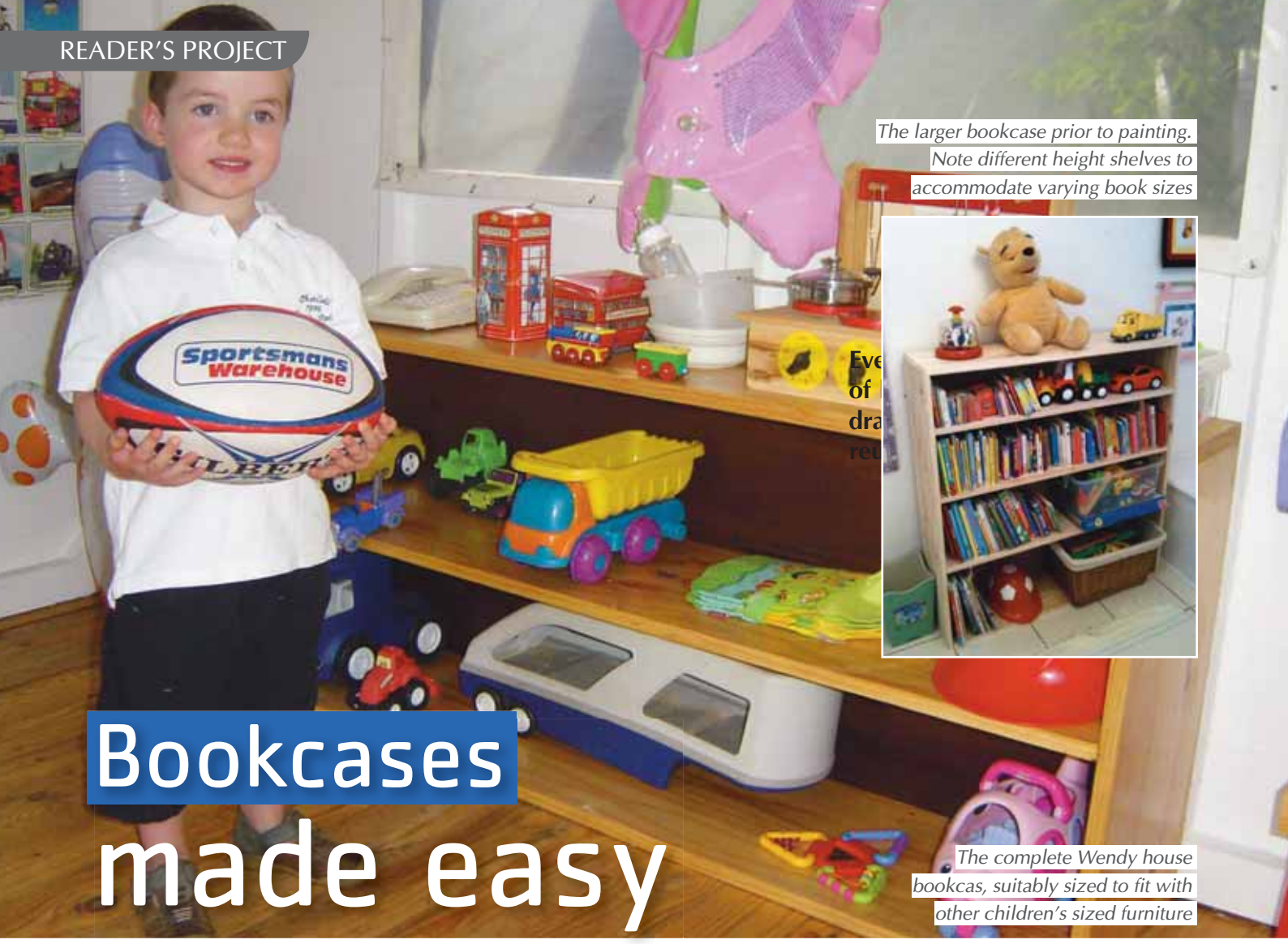
Woodworking allows Setshedi to appreciate the importance of both conformity and of being revolutionary. "The greatest lesson I have learnt is that you need to keep up with trends and general principals while still being unique."

Sharing the passion

The industry also gives Setshedi an opportunity to share his love of working with wood. "Carpentry is not as popular as it was once before. Even in school, it's not a major focus. I can share my skills and encourage others to appreciate woodworking the way I do."

Setshedi encourages anyone who loves working with wood to pursue their passion.

"There is very little which can compare to piecing wood together to create a piece of furniture that people can keep in their homes forever. It is very fulfilling."



The larger bookcase prior to painting. Note different height shelves to accommodate varying book sizes

The complete Wendy house bookcas, suitably sized to fit with other children's sized furniture

Bookcases made easy

Bookcases are essential for young children to store books and toys that they need to access easily. Using a very simple and cost-effective design I made two types – a larger one for inside the house and two smaller ones for the Wendy house.

>> Peter Alkema

Project guide

Difficulty: Very easy

Estimated time: 6 hours

Cost: R300-500 (depending on the size of the bookcase)

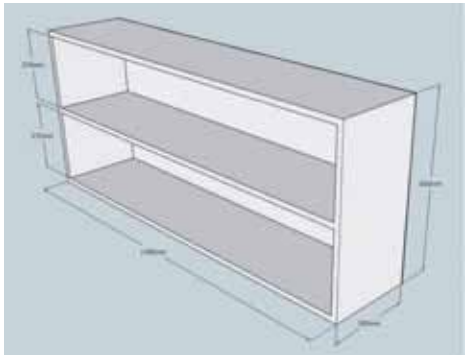
After completing a window seat for our 'kiddie's corner' (see 'Make a Window Seat,' The Home Handyman November 2010), we soon realised a bookcase in the same area was the next priority. The twins love reading and they enjoy being able to select their favourite book for story time. We also needed a bookcase for each of them inside the Wendy house (see 'Home from home,' The Home Handyman December 2010). This article demonstrates how you can use the same principles in both designs to custom make a bookcase for your requirements.

The larger bookcase next to the window seat features four shelves plus a top surface, with each shelf a different height, given that children's books vary in height considerably. A simple routered edging on the top surface finishes off the bookcase which is primed and painted white to match the window seat and inside décor. The two bookcases in the Wendy house are lower, wider and feature only two shelves plus a top surface without any edging detail. They are varnished to retain the natural wood finish.

Note: Pictures featured in the steps are for the Wendy house bookcases unless otherwise indicated, although the principles are applicable to both designs.

Please note that additional vertical supports at the mid points are probably required for widths of greater than 1,5m.

These drawings are done with Sketchup and are available for downloading on the Google 3D Warehouse website from the collection 'Peter Alkema's Projects'.



Wendy house bookcase

Window seat bookcase

Step 1: Based on the dimensions of your bookcase design, work out the required measurements for the wood and have it pre-cut to improve accuracy of the final assembly. All wood is pine shelving, and try select straight pieces that are not warped or bent and also try and minimise any knots.

Step 2: Design is based on simple right angle brackets, each with four screws at the end of each shelf and at the outer corners of the bookcase. Mark the positions of these brackets before assembly, being a quarter of the width of the shelf from the front and back edges.

Step 3: Using the end of an assembled trestle table clamp the bottom shelf and side uprights in position, ensuring accurate right angles with framing clamps. Tip: Be sure to decide which is the front of the bookcase so that you can choose the best edges of the wood.

Step 4: For each join, follow these steps: (a) Position the right angle brackets based on the measurements made earlier and use an awl to gouge the positions for drilling pilot holes. (b) Remove the brackets from their positions and drill pilot holes for each screw. (c) Using sandpaper or a sanding block, remove any burs from the pilot holes. (d) Affix all screws to hold the brackets in place. (e) Once both brackets are in place for each join, check for right angles with a set square.

Step 5: Now that the base and the side uprights are securely affixed, remove the framing clamps and position the top piece accurately. Repeat step 4 for each bracket at both ends.

Step 6: Measure and mark off the positioning on both uprights for the internal shelf/shelves. Be sure to do this on the front and back edges.

Step 7: Position the internal shelf with the framing clamps and repeat step 4 for each intersection as required. (Only one internal shelf was required for the Wendy house bookcases, but the larger one required repeating step 7 for each of the three internal shelves.)

Step 8: Position the pre-cut backing on the rear side of the bookcase, and nail down around the edges. Mark off the position of the back edge of the internal shelves and nail down into these as well. Tip: To save time when nailing down the backing, avoid measuring nail positions by simply nailing down the four corners, then the mid points, then successive mid points until secure enough.

1

Have all wood and the backing board pre-cut if possible

2

Mark the bracket positions at the ends of all horizontal lengths

3

Clamp the bottom shelf and side uprights in position

4a

Use an awl to gouge the positions of the pilot holes

Drill the pilot holes

Remove any burs from the pilot holes

Affix each screw

Check that the join is right angles with a set square

Step 9: Although it is a very basic construction, and any lack of accurate assembly may result in protrusions, it is worth removing these and aligning all edges with an electric sander if you have one. (Ensure you are wearing adequate safety gear and also that the bookcase is securely clamped down.) Check for splintered edges and address these as well, although do not round off the corners significantly. Any imperfections are more easily hidden if you are painting the bookcase.

Step 10: Apply two coats of varnish for a natural wood finish, or prime and paint a colour of your choice. Make sure you rub with steel wool, or sand down with a fine grit between coats to achieve a smoother final coat.

Position the top piece

Mark off the positions of the internal shelf/shelves

Position the internal shelf

Position and nail down the backing

Sand off any protrusions from the joints

Coat as required

Weather Tape

If your home isn't well insulated, it'll lose heat through gaps and cracks

>> Gina Hartoog

Apply weather stripping around window and door frames to seal these gaps and increase your home's energy efficiency. Weather tape is available at almost any hardware – it is a multipurpose self-adhesive foam that can be used for sealing gaps. It can also be used to improve sound insulation or rattle dampening. If correctly applied, the stripping should last at least six years. The product comes in different widths and lengths according to your needs.

Step 1: Check surfaces where the weather-stripping is going to be applied. If they are deteriorated or dirty, the adhesive backing won't stick correctly. If the surface is rusted or chipped, use sandpaper to remove flaking paint and smooth over the surface. Clean all surfaces well with cleaning fluid and a cloth, then allow to dry.

Step 2: Weather-stripping should be applied to the inside edge of the door or window frames – on the jamb (the area where the door or window and frame meet). Measure the length of the jamb, then cut a length of weather-stripping.

Step 3: Carefully peel away a section of wax paper backing and place the adhesive side at the beginning of the jamb you have just measured. Press the seal down along the length, pulling away the backing paper as you go along. Take care to position it correctly as the adhesive is strong and will adhere quickly. There should be no bubbles or folds in the seal.

Step 4: Close the window or door and check that the weather-stripping is in place between the window or door jamb and that the seal is pressing against the door or window.

Tools and materials

- weather sealing material
- cleaning cloth
- alcohol based cleaner
- flat screwdriver
- scissors
- tape measure
- smooth 100- or 80-grit sandpaper

TIP

Where possible, always install weather-stripping in one continuous strip. Fit it in tightly together at corners. If the strips don't push in easily, use a screwdriver to push them down.

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Bedside manner

Chris Beswick shows you how to make a simple and practical table using dowels and laminated pine

The finished bedside table has a bottom rack for holding books and magazines

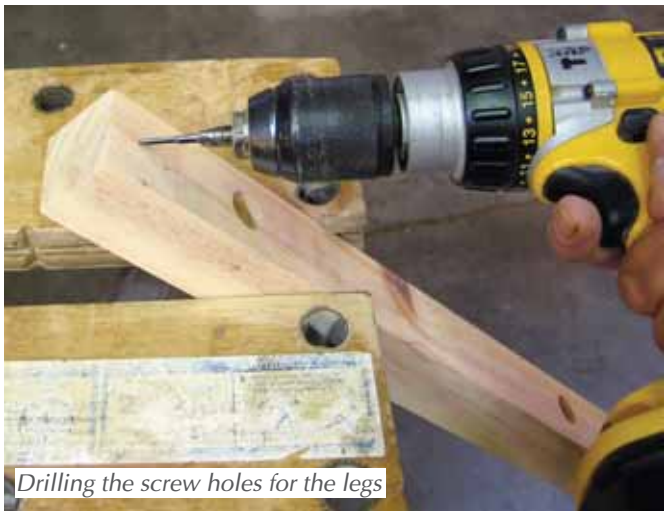
In two previous articles, I have described the use of dowels as construction elements rather than their more common use as a method of joining pieces of wood. This article describes how to make a simple bedside table with a lower tray for storage of magazines, books etc. I used laminated pine board for the top and tray, and 44mm x 44mm PAR (planed all round) pine for the legs. Choose the wood carefully to ensure that it is straight and knot-free. As with the previous dowel designs, no special skills or experience in making joints is needed.

The top

Begin by making the top. The dimensions I have used give a finished size of 500mm x 500mm for the top (including the 20mm pine lipping applied to tidy up the appearance of the end grain). These dimensions could be varied to some extent as you wish. I cut the laminated pine from a 530mm standard width to 500mm, cutting along the grain to a length of 460mm, allowing for the 20mm lipping on both ends to bring this dimension to 500mm. When applying the lipping, since the end-grain is very absorbent, it is best to coat the edge with the wood glue, allow it to dry, and then apply another coat of glue to join the lipping to the top. Carefully clamp in place whilst the joints dry. It is usually best to sand all surfaces of the components as soon they are completed, so once the top is dry, sand with 140-grit or finer sandpaper and set aside.

Drilling the screw holes for the legs

The legs are cut from 44mm x 44mm pine to a length of 580mm. A comfortable height for a bedside table will depend on the height of the mattress and also your personal preferences, so make sure that the chosen height is comfortable. The eight 19mm dowels are cut to 365mm in length. The legs are drilled with the 19mm bit to a consistent depth of 16mm using the bench drill. The holes are on two sides of the legs at 60mm from one end (the top) and 200mm from the bottom for the tray. These dimensions can be varied, but for the lower tray to be fitted, it must fit diagonally between the top dowel rail and the bottom dowel rail when



Drilling the screw holes for the legs

> "...check that the frame is square in all planes and that it sits well on a level floor."

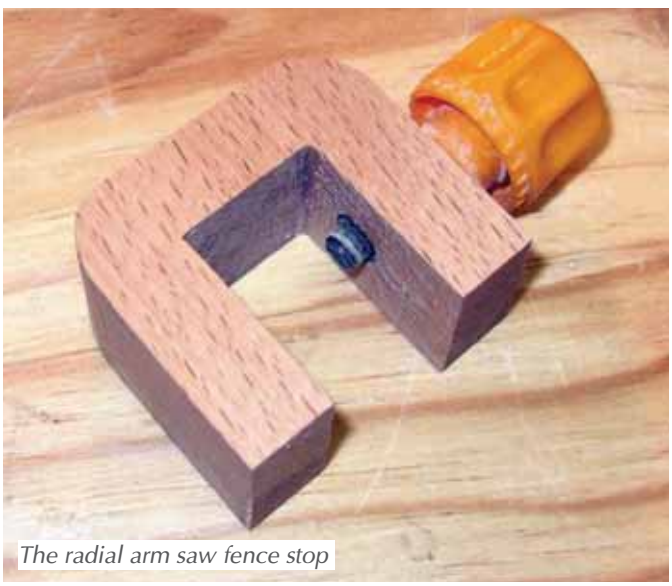
assembling. The dimensions given will work for a 20mm thick base tray, although in this case I used a lighter piece of laminated pine planed down to 10mm.

Drill and countersink the clearance holes in the legs to take the screws, which will join the top to the frame as shown. Bear in mind that the screw holes should ideally be on one of the inside surfaces when complete. As a guide, the screws should project through the legs at approximately the centre of the top. Test fit the screws making sure that they fit and will not break through the top when screwed into place. 40mm screws were my chosen size, but checking is necessary, as the exact angle drilled will alter the required length. It is also better if the screw holes are slightly offset in the lateral plane, thereby providing clearance from the top dowels for the screwdriver when fixing the frame to the top. Sand the legs on all surfaces, and slightly chamfer all the edges and the corners of the legs at their base.

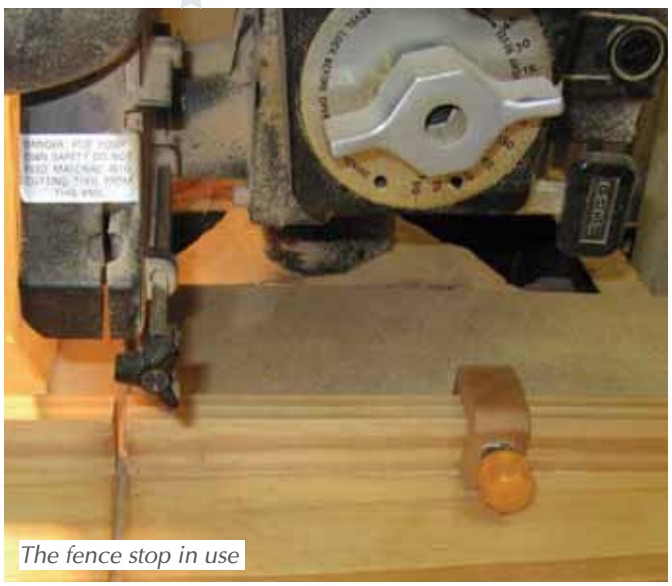
I cut the dowels which join the legs on a radial arm saw. The use of a homemade stop made the repetitive cutting much easier, faster and more accurate. The stop consists of a 3-sided piece of hardwood with a T-nut glued in to the front, to carry a bolt that is tightened enough to bear against the front face of the fence and clamp the stop in place. The end of the length of dowel is then held against the fence and the stop for cutting. This technique guarantees that the components are all of the same length. Sand the dowels smooth after cutting and slightly chamfer the ends for easy assembly.

Assembly

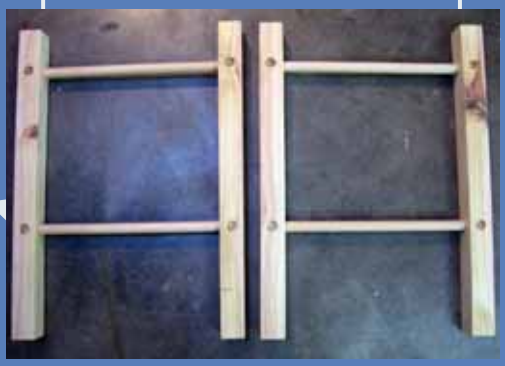
It is easier to assemble two separate frames for the two opposite sides of the table and then join these together to form the completed under-frame of the table. Apply the PVA glue into the base and sides of the holes. Insert the dowels and gently hammer home with a hammer using a wooden block between the hammer and the component to avoid damage to the surfaces. You will notice



The radial arm saw fence stop



The fence stop in use



The assembly of the legs showing the dowel placement

The four legs held together with the aid of the dowels

Close-up of the legs showing how the dowels fit neatly into the round recesses

The template: note the grain direction marking

that a hammer blow applied to a dowel has a duller sound once they are totally bottomed in the holes. Check that the completed frames are square. Provided that the holes are all of the same depth and the dowels are of the same length, the frames should be perfectly square. Remove any excess glue with a wet cloth before it dries. Complete the assembly of the under-frame by joining the two frames with the remaining dowels. Once again, check that the frame is square in all planes and that it sits well on a level floor. Allow the assembly to dry thoroughly.

To fix the top, turn the under-frame assembly upside down and align the legs equidistant from the top edges. Drill shallow pilot holes into the top through the angled holes in the legs or use the variety of chipboard screws that can cut their own pilot hole.

Lower tray

A cardboard template should be made for the bottom tray, where the grain direction should be the same as the top. Mark the grain direction on the template and draw around the template. The laminated pine can now be marked using the template and cut to size. Test fit the tray, and adjust the fit as necessary. The tray should be a comfortable fit but not too tight. Remove shavings of wood or sand where necessary until the fit is good.

With the tray in place, mark out for the 20mm end grain lipping and re-cut the tray to allow its application.

Make the tray slightly oversized and then plane after the lipping has been applied to get a really precise fit. The tray can be glued into place or left loose if you wish.

Finishing

The finish is a matter of personal choice. You could finish the table with a coat of primer and two coats of enamel to match the colour scheme of your bedroom. I kept the finish natural, and used three coats of Danish oil darkened slightly with oak pigment, rubbing down lightly with some 400 wet-and-dry paper between coats two and three. With a final two coats of a good quality paste wax, the first coat applied with wire wool, the project was complete and ready for use.

Materials

- Laminated pine 530mm wide – at least 1 metre length.
- 44mm x 44mm pine – 2400mm (a standard length).
- 19mm dowel – at least 1.5 metres.
- 22mm x 22mm pine – 2400mm (a standard length).
- A bench drill and a 19mm bit (preferably of a saw tooth or Forstner pattern, although a spade bit would also serve the purpose). These are the essential tools required for the drilling.

BEAT STAINS

Discover quick ways of getting rid of unwanted dirt and stains in your home.

>> Gina Hartoog

There's no need to rip out all the tiles in your bathroom because the grout looks grubby, or re-pave the driveway because the moss has taken over. We look at ways to beat the most common stains, marks and unwanted build-ups in your home.

QUICK FIX: TILE GROUT

Dirt can build up on tile grout very quickly, especially on tiled floors. For small areas you can try vinegar and water (1:1) and enough baking soda to make a paste. Smear the paste on the grout, leave to set, then scrub with a stiff bristle brush. Use small circular motions to really lift the dirt and rinse well with water. A commercial grout cleaner is a good option if you have a large area to clean. Always test any product first to make sure it won't discolour or damage your grout. Once you've removed the dirt, apply a grout sealer to prevent dirt build-up again.

QUICK FIX: BATHROOM MOULD

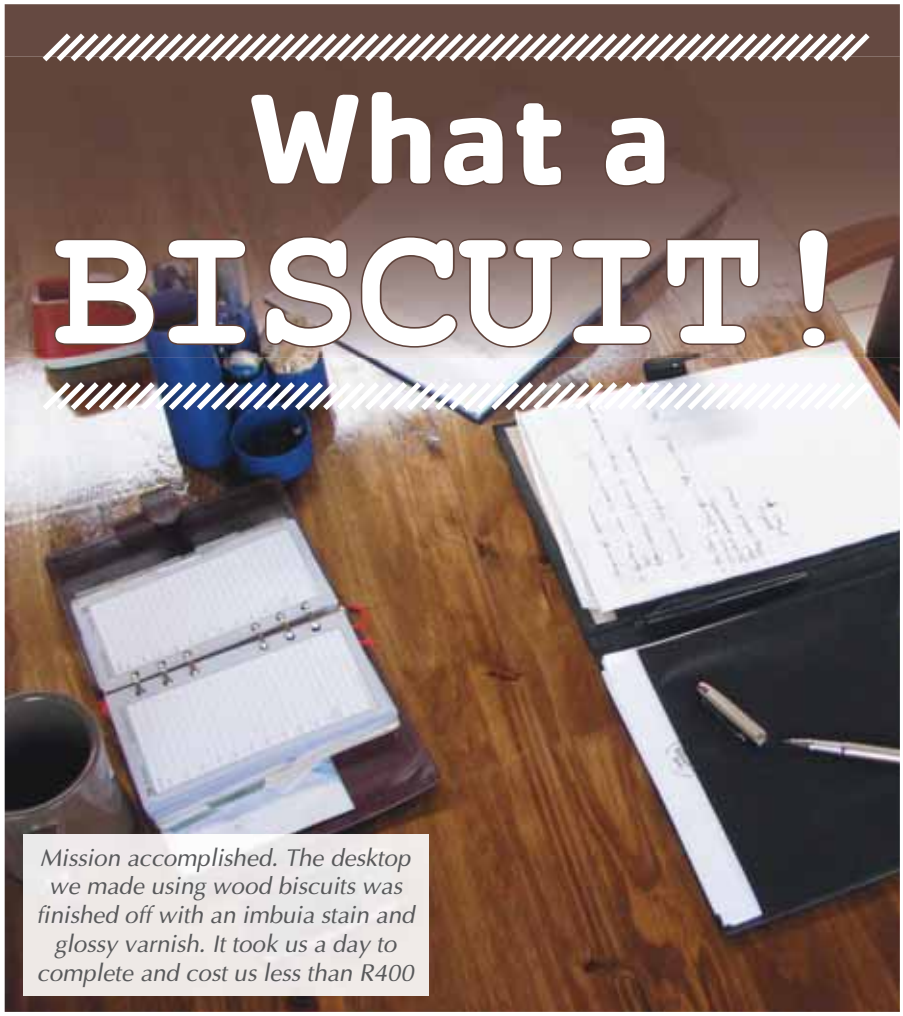
To remove mould from a bathroom ceiling, clean the area very well with a mixture of water and bleach (2:1). Afterwards you can recoat the ceiling with a good quality bathroom paint. Walls can be treated in the same way. The problem is an indication of high humidity in the bathroom and you will need to address this problem or the mould will start again. Extractor fans provide the best long term solution.

Mould can also occur on or around silicone seals along the bath and basin. This can be tough to remove and some products remove the mould but discolour the sealer. If the seal is old and broken in places, it's best to remove the old seal and reapply with a mould resistant silicone designed for bathrooms. Remember to fill the bath halfway with water before applying the sealant.

QUICK FIX: ENGINE OIL ON PAVING

If it's a new stain and there's a pool of oil sitting on your driveway, you need to mop it up quickly. Don't reach for old towels, rather sprinkle clean cat litter over the oil. It will draw up the moisture and all you'll have to do is sweep away the clumps. Old oil stains are tough to get out. Make a paste with your regular washing power and a little water. Smear the paste over the stain and leave overnight. The following morning add boiling water, let it sit for awhile then give the area a good scrub. Rinse well. Repeat a few times for really stubborn stains. You could also try a good, grease-cutting liquid dishwashing soap.

What a BISCUIT!



Mission accomplished. The desktop we made using wood biscuits was finished off with an imbuia stain and glossy varnish. It took us a day to complete and cost us less than R400

Two wooden boards can be joined together virtually seamlessly using biscuits. Woodworker Andries Eygelaar explains to Clifford Roberts how this cost effective and simple project can be tackled

A woodworker sometimes needs to join planks to create a larger surface, for example when making a desktop. There are a variety of ways to do this; lamination is one way to ensure a strong splice; another is by using biscuits. While these little components may resemble the baked treats in size and appearance, the types employed in the workshop are made of wood.

Hardware shops sell ready-made biscuits, but mostly in large packs. If you're undertaking a job that only requires a few, it is cost effective and easy enough to make your own.

Ideally, your biscuits should be made of a strong hardwood – like offcuts of meranti. They are most often used in dimensions of around 50 x 20 x 3mm. Make sure when you cut them that their grain will lie perpendicular to that of the planks to be joined. This makes for a stronger splice.

Lay out your planks as they would appear in the final assembly and mark them in order to work with the planks in the same configuration throughout (see the handy woodworking tip in the box).

While the planks are lined up in this position together, start the project by marking across both boards the areas where the biscuit will be inserted. Determine the centre of the edge that will be joined, then mark the outermost locations along the edge. These shouldn't be closer than about 15cm to the end of the plank. Once this mark is identified, divide the space between this and each of the centre marks – these will be the location of your other biscuits. Continue dividing the spaces as the length of your plank determines. Then take the planks apart and measure around 30mm either way from each mark to identify where your groove will start and finish (each groove will be around 60mm in length). A strong splice along the full length of the planks will allow for about 300-400mm between each biscuit. Check to ensure that the markings line up exactly on both surfaces to be joined.

Using an electric router with a groove-cutter bit, cut the grooves where you have marked the planks. You will notice that the grooves cut by the round bit create an oval hollow. This is why biscuits sold by the hardware store have rounded edges. To ensure your biscuits fit well, you will also need to cut away their corner edges with a chisel or a saw.

The biscuits need to fit snugly into these grooves, so test each one as you cut them.

Once you have prepared all your biscuits and respective grooves, it's time to splice the planks. Place a little wood glue in all the grooves and insert your biscuits

In Brief

The aim of our project was to construct a desktop of 1,7 x 0,75m. The laminated pine board we bought at the local wood merchant was too narrow for this purpose, so we purchased two and used home-made biscuits made from offcuts to splice them together. Excluding the cost of the boards (R180 each) and items to finish off the desktop – wood stain and varnish – the cost of the remaining items was less than R50. It took us one day from start to finish.

You will need

- Hardwood offcuts, like meranti
- An electric router with a groove-cutter bit
- Cold wood glue
- A saw
- Trestles
- Sash clamps

along the edge of one plank. Then run some glue along both surfaces to be joined. Don't worry about using too much glue – the excess can be wiped away once the planks are spliced.

Now, lay the planks on the trestles and, lining up the exposed biscuits with the grooves on the other plank, gently tap the planks together. There should be no gap along the splice and the bottom and top edges should be lined up to create one, even, rectangular surface. Space your sash clamps evenly along the entire surface of the planks and attach them firmly, but carefully so as not to damage the wood. It is important that when using numerous clamps, they alternate on either side of the planks – use the first one above, the next one on the underside, then above, and so on. This ensures an even stress across the surface and prevents warping.

Leave the assembly to dry – this could be in as little as one hour, in colder weather it takes longer – before you proceed to the next step, whether it be varnishing or sanding.

TIP

Experienced woodworkers know that planks are imperfect objects, so even though planks may look similar on all sides, this is not always the case. Avoid frustration later in a project by laying out your planks as they would appear in the final assembly and marking them. One way is to draw a triangle across the surface. This not only identifies the same side of the planks, but also the configuration.

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A circular saw allows for the quick and easy cutting of hardwood offcuts and their conversion into biscuits. Make sure you use safety precautions when undertaking this

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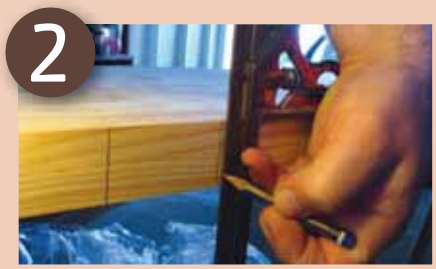

Mark the positions of the grooves

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Make sure they line up with those on the plank you intend to join

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Using an electric router with a groove-cutter bit, cut the grooves where you have marked the planks

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The grooves cut by the router create an oval hollow. This is why store bought biscuits have rounded edges

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Make sure your biscuits fit snugly into the grooves

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Run some glue along both surfaces to be joined

8

Gently tap the planks together

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Our biscuit (right) and one you would be able to purchase at the hardware store

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Use sash clamps to fix the planks in place until the glue has dried. Alternate the placing of the clamps above and below the board to prevent warping

Handheld electric sanders

A belt sander is used to clean up wood quickly and efficiently

Professional results are within your hands grasp when making use of handheld power sanders

Sandpaper grades and uses

Grit	Type	Uses
40-60	Coarse	Heavy sanding and stripping, roughing up the surface.
80-120	Medium	Smoothing of the surface, removing smaller imperfections and marks.
150-180	Fine	Final sanding pass before finishing the wood.
220-240	Very fine	Sanding between coats of stain or sealer.
280-320	Extra fine	Removing dust spots or marks between finishing coats.
360-600	Super fine	Final sanding to remove surface blemishes and scratches.

>> Gareth Greathead

Sanding is the mechanical process of using an abrasive paper to etch scratches onto a surface in an effort to remove a covering or flatten and prepare a surface. Many home DIY chores such as painting gutters, resurfacing a door or maintaining wood require sanding. Electric sanders can save woodworkers hundreds of hours when it comes to the preparation of wood.

Using the right sander for the job and pairing it with the correct abrasive is important in obtaining satisfactory results. Use the wrong sander, or the incorrect grit disk and you can ruin projects, waste a lot of time and put unnecessary strain on your tools. The lower the number on the sandpaper, the coarser the particles of silica and the deeper the scratches it creates. Commonly available grits for electric sanders range from 80-240 grit.

It is easiest to break sanders down into the basic types and then decide which one will be the most suitable for the job at hand. Power sanders come in three basic types; belt sanders, orbital sanders, random orbit sanders, and more specialised sanders like the 'finer sander' and 'mouse sander'.

Belt sanders

Belt sanders are big, heavy and powerful tools that can remove a large amount of material quickly. At home a belt sander can be used to flatten a large, flat surface such as a door, deck or even hardwood floors. It is also good for removing paint and varnish. These machines are loud and can be dangerous if you aren't careful.

Belt sanders use reinforced belts that form a continuous loop. Belt sanders come in three different sizes and the belts in a variety of lengths and widths.

How to use an electric sander

- Start with a coarse grit sandpaper and move your way up.
- Allow your strokes to overlap slightly.
- Avoid applying too much pressure – allow the sander to do the work.
- Move the sander parallel to the grain of the wood where possible.
- Always keep the sander flush against the surface.
- You can run a pencil over the surface being sanded. This will allow you to see where the sander is making contact and where more work must be done.
- As with most power tools, it is important to have the orbital sander running before it contacts the work surface and only switched off when it has left the piece.

What to look for in an electric sander

- Sanders with a lower wattage are less aggressive and easier to use.
- Sanders with higher wattages are designed to remove more material.
- Sanders should come with a dust port and dust collector bag or collector and filter bag.
- Check that the dust port can be connected to a household vacuum cleaner or extraction unit.

Larger machines and belts will be more aggressive than smaller sanders.

The general design consists of two cylindrical drums at the front and back of the sander. The one at the rear is powered by the motor and the one in front is free running and has a fine belt adjustment knob to help with belt tracking. There is normally a belt release lever on the open side of the sander for replacement of belts. There is a steel skid place at the bottom of the sander and this is the area where the sandpaper contacts the surface being sanded. Most sanders also have a dust ports that can be connected to a dust extraction system or household vacuum cleaner.

Using a belt sander

Applying too much pressure will create deep impressions in the wood that can be difficult to remove. Sand with the grain and keep the sander moving at all times to avoid sanding depressions in the wood. Move the sander in a circular motion with the grain. Also, hold the sander by the handles and allow the weight of the sander to do most the work. Adding too much pressure will also cause belts to wear faster and clog with varnish and paint.

Edges of boards can be sanded with a belt sander. It can be difficult to keep the sander flat against a narrow edge,

Random orbit sander is ideal for stripping paint off furniture, preparing new moulding, or cleaning up between finish coats

Most sanders come equipped with a dust collection bag or can be connected to a vacuum cleaner

Modern sanders allow you to work in the tightest corners

Electric power sanders use abrasive belts, disks and pads instead of sheets of sandpaper

and if you plan to sand more than one edge, it is better to clamp several boards together. This makes it easier to balance the sander and ensures that all the edges receive the same amount of attention.

Orbital sanders

The orbital sander has a base plate attached to the body of the sander via rubber grommets. The internal drive delivers power through these grommets causing the base to vibrate. This configuration causes the sander to oscillate creating a gyroscopic movement which moves the sandpaper underneath in a random oval pattern. If you hold an orbital sander against a workpiece and sand very lightly, you will feel how it gravitates towards a different direction each time – something like a pool Kreepy.

In operation the oscillating action will be combined with the vertical or horizontal input from you moving it up and down. It is designed to remove only a small amount of material and is used in the final finishing. This makes orbital sanders more forgiving and easier to perfect.

Quarter sheet square finishing sanders are relatively quiet, have low vibration and can reach places the larger orbital sander cannot reach. For example, it will be possible to get right into the corner of the surface on the inside of a framed object. It is called a quarter sheet because it uses a quarter of a conventional sheet of sandpaper.

Detail/finishing random orbital sanders are smaller and normally have a shape that allows you to get into difficult spots. They are good for picking out high spots and reaching into crevices. Some of these sanders come with interchangeable accessories in shapes that are designed to help you get into the tightest spots.

Using an orbital sander

Applying too much pressure will strain the sander, causing it to bog down. At the same time, the pressure will cause the sander to create shallow swirls on your work surface that undo any progress you may have made. The handles on an orbital sander are mainly for guidance and keeping the sander flat against the work surface. By holding the sander by the handles will allow you to apply even, gentle pressure, maximising the contact area of the abrasive.

When sanding the edges of boards, allow only half of the sanding pad to extend over the edge of the piece being sanded. This will prevent rounding of the edges.

Random orbital sanders

Random orbital sanders oscillate, but also rotate the sanding disc at high speed. They have a round sanding pad and will remove more material than an orbital sander, but less than a belt sander, making it the perfect all rounder. The spinning motion added with the random orbital sander means that the path of the paper moving around changes. When trying to flatten an indentation or imperfection, it can be tempting to tilt the sander in an effort to apply concentrated pressure in a particular area. This will certainly damage the surface and take you back a few steps. These sanders normally have one handle and are operated with one hand, allowing greater manoeuvrability.

Safety

Sanding produces tiny microscopic particles of dust that may not be visible to the eye. This dust can permanently scar your lungs and reduce lung capacity. Many sanders are loud and because they are often used for a long period of time, the possibility of hearing damage is increased. At the same time, it is impossible to know if there are nails or other objects in the wood you are sanding. A sander has the ability to launch an object at speed. Because of these dangers, a dust mask, hearing protection and safety goggles are required.

Grit	Surface	Finish	
40-60	Remove paint or varnish Rapid removal of material	Coarse	Open-grit particles allow for removal without blocking
80-120	Sand raw wood Gentle removal of paint or varnish	Medium	Smooth surface after coarse sanding Remove scratches
180-240	Sand raw wood to prepare for finishing	Fine	Sand between coats of paint or varnish
320-1200	Fine finish	Finsihing	Remove scratches from previous sanding

Home office FIX

Whether you work from home or simply use an area to store your computer, other electronic equipment and household paperwork, the home office or study is an essential part of a modern home. We've sourced some simple solutions for common problems in the home office.

>> Gina Hartoog

QUICK FIX: MOSAIC BOOKENDS

Shelves are great for getting the clutter off your work space, but often the books are heavy and tend to topple over. A set of bookends solves this pesky problem. If you've just tiled your home, you'll have everything on hand. You can also recycle chipped or cracked dinner plates or use a combination of both. If you need to buy adhesive, rather purchase 'mosaic fix'. It's an adhesive and grout combination and will save you a few steps. Use one brick per bookend for larger books, or one brick cut in half for smaller books. We used an angle grinder to cut the brick.

Tools and materials: one or two paving bricks; some old tiles; some tile adhesive and grout; hammer; piece of non-slip rubber backing, old towel, glue; clear lacquer (spray paint).

Step1: Break the old tiles into small pieces. Wrap them in an old towel (pattern side down), then break gently with a hammer – first in the centre, then at the four corners.

Step 2: Mix up adhesive. Apply the tile chips to make the mosaic. Glue them randomly or follow a specific pattern. Don't leave big gaps, rather break up the pieces and work them in.

Step 3: Allow to dry completely (24 hours).

Step 4: Mix and apply grout. Wipe down and allow to dry.

Step 5: Make a template of the base of the brick, cut out non-slip backing and glue in place.

Step 6: Seal the bookends with clear lacquer.

Cost: Under R40 (depending on what's on hand).

QUICK FIX: CHANGE A LAMP PLUG

The home office is notorious for masses of cables running from computers and printers to the modem and cordless telephone bases. Most electronic equipment comes standard with two pin plugs. When plug sockets are overloaded with too many adapters for two pin plugs, the three pin sockets are often left empty. Overloaded adapters are a huge fire risk. Your desk lamp plug can be changed from a two pin to a three pin with little fuss. If your lamp is new, first check the box or booklet before you change the plug, as it may, in some cases, void the guarantee.

Tools and materials: side-cutters; knife; new three pin plug; small screwdriver.

Step 1: Use side-cutters to cut off the two-pin plug, between 20 and 30mm from the end.

Step 2: If the cable has an outer insulation sheath (if you can see two wires running alongside each other, it doesn't), you can use a knife to remove the insulation –about 30mm from the end.

Step 3: Remove a section of the wire insulation (10mm) from around each of the copper cores.

Step 4: Fold the 10mm section in half, back against the wire (5mm).

Step 5: Open the new plug. If your wires are colour coded, place the blue wire on the neutral and brown on the live. The live is always on the right hand side when the plug is open in front of you. If the wires are not coloured coded, you can place either of the two wires in any of the short, bottom two prongs but not the long top prong

(earth). Slide each wire into the holes in the prongs. Push them in from the top of the plug, then flip over. Tighten screws to hold firmly in place. Slip the wire firmly between the plastic grips.

Step 6: Snap on or screw the plug cover in place.

Note: *You can also use these instructions to replace any three pin plug. Just add an extra step to insert the yellow and green 'earth' wire into the top prong.*

The Panel of DOOM

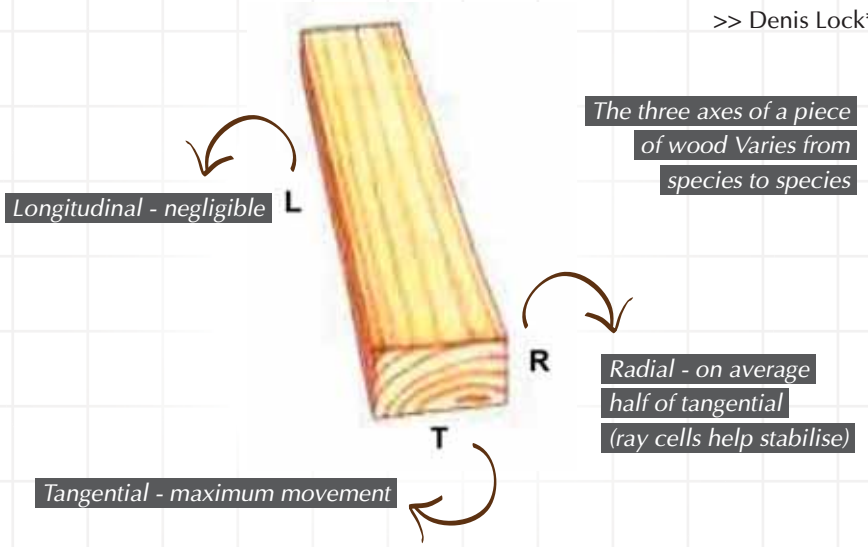
Denis Lock explains the principles behind wood movement, what to expect and what to do to prevent costly mistakes

>> Denis Lock*

For the last ten years I have run a woodworking school and consultancy. I have seen some fine woodwork and I have seen some costly mistakes. Most of these mistakes can be attributed to a single cause: a lack of knowledge of the properties of wood. It can be summed up in the phrase "Somebody forgot to tell them that wood always moves."

Wood is made up of countless tiny tubular cells (consisting primarily of cellulose) held together by wood's own glue, lignin. A cubic centimetre of softwood contains about a quarter of a million cells. Most of these cells are vertically orientated (parallel to the long axis of the tree trunk).

Cellulose is hygroscopic: tends to absorb moisture from the air. As a result the moisture content of wood in items you have built changes as the relative humidity of the surrounding air changes. This change is not instantaneous, but it is continuous. As we move from the wet season to the dry season the wood cells loose water and the wood shrinks. When the rains come, the wood cells gain water and the wood expands.



Wood movement

The term wood movement is used to describe the seasonal shrinkage and expansion of manufactured wooden goods. You have probably experienced this: doors and drawers than open and close freely in the dry season can refuse to budge in the wet season. How much it moves depends on the wood species, how it was cut from the log and how dry our houses get in winter and how damp in summer. Reverse this last statement if you live in a winter rainfall area.

This shrinkage is not uniform. The wood cells change in thickness, not in length. Shrinkage in the longitudinal direction (see Figure 1) is thus negligible. Not all cells are vertically orientated. There are some horizontal cells in the wood's rays and these help to make the radial dimension more stable than the tangential dimension. On average the radial (quartersawn) movement is half that of the tangential (flatsawn) movement.

The differential in wood movement along the longitudinal, tangential and radial axes is sufficient to cause cracked table tops and door panels (see Photo 1). It is sufficient to force carefully fitted joints open. Wooden projects that break the rules for coping with wood movement are destined to self-destruct. It may take two or more years to happen, but it will happen.

Most wood projects, other than say a simple cutting board, have multiple pieces of wood arranged at different angles to each other. Consider a table for example. The legs are vertical and the apron pieces that join the legs are horizontal. The joint, often a mortice and tenon (Photo 2), consists of two pieces of wood at right angles to each other. There is, as can be seen, a grain direction conflict that results in a wood movement conflict.

I have made thousands of hardwood mortice and tenon, and similar right-angled, joints and the wood movement conflict has not been a problem. This is because the width and length of the tenon is 75mm or less. At this dimension the elasticity of the wood can cope with the movement differential and the joint is trouble free. Go beyond 75mm (an average figure – higher for softwoods) and if the two pieces are firmly glued and/or screwed together you start flirting with trouble.

The 75mm rule

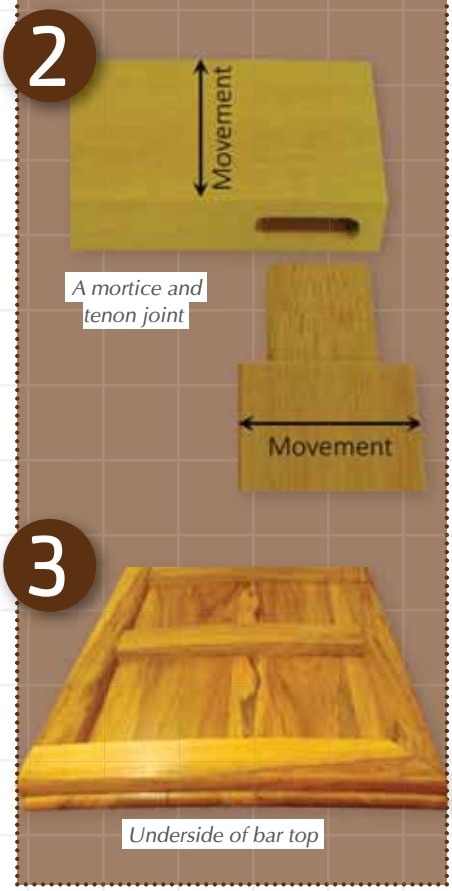
I call the rule I follow and impress upon my students the 75mm rule. When joining two pieces of wood together at an angle (a grain-direction conflict), do not solidly attach (glue, screws or otherwise), an area where either dimension exceeds 75mm. The largest components encountered by woodworkers are usually panels such as tops, side panels and doors. These far exceed the 75mm limit set above. A dining room top might be as wide as 1500mm. A red oak top this wide can move by as much as 10mm between summer and winter.

Woodworkers often attach a piece of long grain wood across the short grain edge of a wide panel. This is done for one of three reasons:

1. Stiffen the panel to avoid cupping or warping.
2. Double the apparent thickness to present a more substantial look.
3. Hide the end grain which can detract from appearance.

Figure 2 is a schematic of a costly mistake incurred by a steak house. The specification for new tables called for red oak table tops that appeared to be 40mm thick (case 2 above). The top half of Figure 2 shows an end view of how the tables looked when delivered: 20mm red oak boards joined edge-to-edge and a 20mm x 60mm red oak mitred frame glued on the underside. This was a serious cross grain conflict: the tops were 1000mm wide. The bottom half of Figure 2 shows an

A cracked door panel caused by wood movement

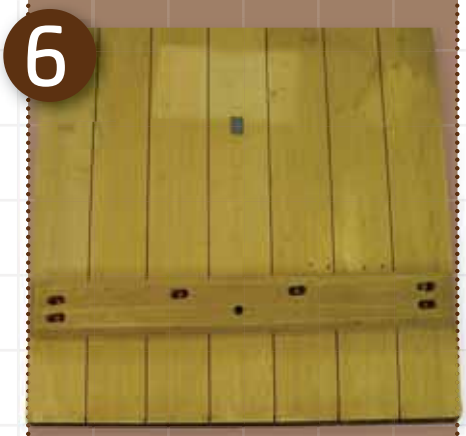


A mortice and tenon joint

Underside of bar top

Cupped bar top

Cracks in bar top



Drawing board construction

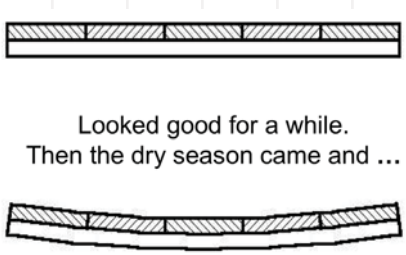


Figure 2: Steak house tables

exaggerated view of what the tops looked like six months later at the end of the dry season. The boards that made up the top had shrunk across the grain by about 5 or 6mm. The solidly glued long grain frame piece stayed 1000mm wide. The top cupped bending the frame strip. The cupping was enough to pull out the screws that held the top to the steel legs. A number of the tops had developed cracks. Figure 2 reminds me of the high school physics lab experiment of heating a bi-metal strip which then curves as the two metals had different coefficients of thermal expansion.

Photo 3 shows the underside of a bar top made of Zimbabwean teak (a hardwood with a high shrinkage/expansion factor). A framework was solidly glued on the underside. The objective was to provide a more substantial appearance and prevent cupping. The opposite happened. Shrinkage across the five boards was constrained by the non-shrinking long-grain cross pieces. The result as can be seen in photos 3, 4 and 5 is serious cupping and splits in three of the boards. Skilled cabinetmakers refer to this type of construction as "Panel of doom."

Have you experienced the panel of doom problem? If you have I have explained the reason. Next issue I will show you how to achieve the three objectives mentioned above. As a teaser Photo 6 taken of the underside of my 60-year old (yes that is long it is since I attended first-year engineering drawing classes) drawing board displays part of the answer.

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

Sources

DN Lock
February 2018
For publication in the April 2018 issue of
The Home Handyman Magazine

Window FIXES

Replace a broken window pane and give the frames and casement stays a new lease on life. Here's how...

>> Gina Hartoog

Windows bring light and air into your home. They may need a little maintenance to keep them working properly and looking good. Take a few hours and tackle some common window problems.

QUICK FIX: REPLACE A BROKEN PANE

Measure the glass size before you order it at the glazer. To get the correct measurement, measure from steel edge to steel edge – from inside the house, then add 15mm to the width and height (for the bit that goes inside the window frame recess). Remember to tell the glazer that you have added this amount. When replacing a broken window pane, always wear eye protection, gloves and good shoes. Wrap the broken pane in newspaper and a plastic bag and take it to your local glazer for proper disposal. Glass panes are not recyclable, so don't leave it at a glass recycling depot.

Tools and materials: tape measure, chisel and small hammer, plastic or newspaper, paint brush, duck tape, new pane, packet of putty, putty knife.

Step 1: Place newspaper or plastic on the inside and outside of the window.

Step 2: Use duct tape in a criss-cross pattern to steady the broken pane.

Step 3: Use a chisel to work the old putty loose. Tap the chisel with a hammer to work out very old, dry putty. Remove the glass.

Step 4: Once the old pane is out, clean the frame well and brush away bits of glass.

Step 5: Roll the putty into a 'snake' about 10mm in diameter. Use your thumb to press it into the frame's recess and work all the way around.

Step 6: Place the glass in the recess and push gently into the putty, starting at the bottom and working upwards. Never push on the centre of the glass. Putty will push out of the sides when the glass is correctly seated – remove the excess with your fingers.

Step 7: Make another putty snake. Press into place on top of the new glass. Work all the way around.

Step 8: Use a putty knife to shape a 45 degree bevel. Remove excess putty.

Step 9: Dip a paint brush in a little water and brush along the putty to seal.

Step 10: Allow to dry completely before painting (about 12 days).

TROUBLESHOOTING

Handles and casement stays – Check all handles. They should be secure on the frame but not too tight or too loose – loosen or tighten the screw in the centre of the handle (use a suitable spanner) and replace the screw if it is missing.

Also replace missing screws on casement stays to ensure that the window can be opened and securely tightened, or it may bang closed in the wind. If dirt or paint is allowed to build up on the casement stay it may be difficult to open and secure the window. Clean out the casement stay and window track with turpentine and wipe down with a cloth and warm soapy water.

Brass casement stays become tarnished over time. Remove from the window by loosening the screws. Remove any paint or dirt build up with lacquer thinners. You may need to soak the casement stay overnight if the build up is very thick. Rub down completely and wash in warm soapy water. Apply a generous layer of brass-cleaner or make a paste with lemon juice and baking soda. Rub gently, clean off with warm, soapy water and shine with a dash of vinegar on a dry cloth.

Putty problems – Check the putty on the outside of the window. Cracked and missing sections of putty can leave the pane unsteady in the frame and it will rattle in the wind. Small leaks around the window can also be a result of a broken putty seal. Scrap out the top layer of old putty and replace.

Cracked or flaking paint on frames – remove the old finish complete using paint stripper. Sand down well. If frames are rusty, apply a rust inhibitive primer before painting. Apply two coats of quality enamel. Allow to dry between coats.

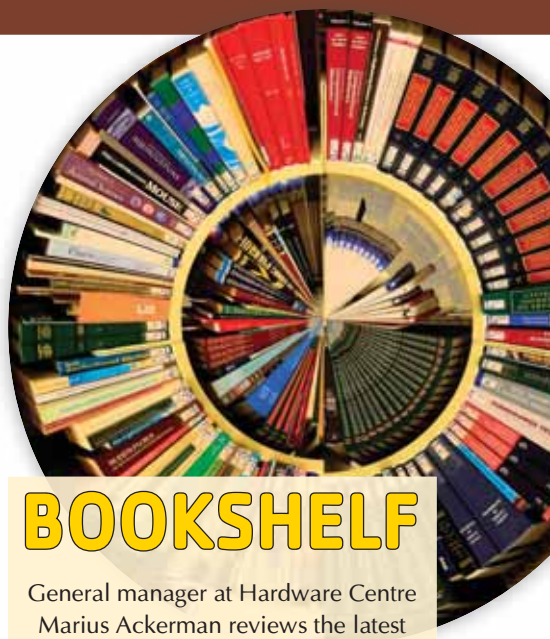
Root carvings of Omaruru

About 250km northwest of Windhoek in Namibia is the small village of Omaruru, in the Eronga region. A spectacular array of root carvings can be found at the Tikoloshe Tree Root Carving Centre. The woodcarvers carve an amazing range of birds, mammals and reptiles from tree trunks and roots. Photographer Lukas Otto took the pictures shown during a visit to Namibia.

An elephant with its trunk extended greets the visitors

A sculptured elephant found in Omaruru Namibia

A tortoise carved by the people of Omaruru



BOOKSHELF

General manager at Hardware Centre Marius Ackerman reviews the latest in woodworking literature

A wooden geared clock made by Andre Esterhuyse from imbuia, parmafin, tamboti, ebony and oak veneer. (AWSA Congress 2008)

This soccer ball was made by Gert Ferreira from wild olive root and exhibited at the AWSA Symposium

A wooden giraffe 'feeding' on the leaves of an acacia tree

A basket bowl turned from jacaranda by John Speedy

Taunton's Complete Illustrated Guide to Using Woodworking Tools

Author: Lonnie Bird

Publisher: Taunton Press

Working with wood must be one of the most satisfying hobbies to take up. Much of the pleasure comes from seeing the transformation of a rough piece of timber into a masterpiece. The tools used to machine the wood usually combine hand and power tools and the techniques used are mastered over time.

This 280-page book is written to assist the novice woodworker in getting the best from his or her tools. The book starts by explaining the structure of wood, the grain and how to process raw logs into usable pieces of timber. The guide makes it easy to find the tools and associated techniques you need. There are over 850 photos and drawings to illustrate the use of hand and power tools. It also includes tips to help you choose and set up the tools correctly.

For more information, contact Hardware Centre
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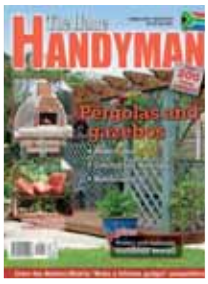

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The MOVE

Reuben the Screwman shares some of his best and worst experiences living in a small town

Boy how time flies. It has been over a year since the last tailpiece and I am delighted to share my funny, and sometimes, not so funny stories with you again. In the interim a lot has happened; I have retired, relocated to the Western Cape and living a dream.

I now reside in a tiny village called Barrydale,

> "A place where nothing happens on a regular basis, and according to local folk law, this can last up to six weeks at a time".

Coming from the big smoke, living in Barrydale is quite a unique experience. Shopping is limited to one shop and a doctor or chemist is an hour away. Summertime temperatures can reach 45°C and winter temperatures can drop to a freezing minus seven. Rain is a rare occurrence in Barrydale but we are surrounded by mountains, where it rains frequently, hence our dams are full and water is plentiful.

We live among some of the scariest creatures on earth; snakes, spiders the size of a deflated soccer ball, as well as baboons and creatures, I'm sure, have not been named yet. This is a town where the mongoose is more prevalent than a house cat, and with the Cape cobra its main diet… You do the math. In the first few months I found it strange, that when you hear a vehicle passing your house, you inadvertently look to see who it is. This may have something to do with the fact that the most traffic we experience is, 'Oom Hedrik' walking his two cows home in the afternoon.

> To live on a dirt road in a town with no traffic lights and no takeaways had been a dream of mine for many years.

That dream came to fruition two years ago, with an added bonus of not only living on a dirt road, but between two dirt roads. Apparently, I did not read the fine print and indemnity of living on a dirt road. The wind gusts up to 40km an hour turning the house into a beach front in a matter of minutes. On the other hand, there cannot be anything more gratifying and serene, than sitting on my 'stoep' on a hot summers night, listening to my friend Klaus playing his trumpet in the distance. His melody is accompanied by crashes of thunder and lightning doing a pirouette behind the Lange Berg, bringing a promise of rain.

A while ago, two new recruit traffic officers were appointed to control the business centre – all ten meters of it. Understandably, they were eager to make their mark and impress the boss. Ken, whom we shall refer to as John, for legal reasons, had two 'streetwise chickens' that roamed the main street and was known to everyone. However, according to Bylaw 12 of the Animal Protection Act, it is illegal to have your chickens roam a public road and 'John' got a R500 fine. The community was outraged and civil war was narrowly averted. Since this tragic event the biggest news has been an advertisement for an honest and trustworthy President seeking employment in Barrydale.

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