

# NOVA Voyager

## DVR 18in Variable Speed Floor Pillar Drill

**Geoffrey Laycock looks  
in-depth at this new  
high tech drill**

Yes, it's a long name for a newcomer to Europe and the UK, a fully electronically controlled large capacity drill press with unique features. Available for over two years in its home country of New Zealand and the USA, it finally arrived here in June and this test is on one of the first delivered to a customer – me. I wanted to replace several conventional pillar drills and looking around none had one feature I wanted – a drilling depth greater than 80mm, many are less than this. The NOVA has a drilling depth maximum of 150mm so I had to have a look.

The NOVA Voyager by Teknatool International is a lot of money at first glance but you can pay much more for a heavy-duty drill press still using multiple pulleys for speed changes. I know from years of experience that I tend to 'make do' with speeds perhaps not quite as they should be rather than fuss with moving one or two drive belts around. I have an electronically controlled variable speed milling machine so I know how flexible and user-friendly this feature is, plus I really wanted something that could drill nearer to 100mm depth. DVR stands for Digital Variable Reluctance drive motor, which is combined with Striatech adaptive control software. Basically a more efficient and controllable motor with very clever software. No gears, no belts, just a direct drive from the motor. Just like the NOVA woodturning lathes that have been available for several years.

The drill arrived very well packaged on a custom-made pallet, sufficient to protect it on its travels all the way from China. Be warned, the package weighs 170kg so think about where it is going to be delivered. In my case I decided to unpack it outside and move it piece by piece into the workshop. Assembly was quite straightforward but I was helped by two young builders who lifted the drilling head onto the pillar as I guided it into position. It is definitely a two/three person task if you don't have lifting equipment. Before the assembly I coated the top section of pillar and the four base securing bolts with a copper-based grease.



A single pallet contains the kit of parts...



...which requires complete self assembly

### First impressions

A reasonably complete toolkit and comprehensive manual are included, along with a USB cable to allow updates to the firmware to be downloaded and installed. It doesn't include a wrench for the base securing bolts and no Allen key for the table in-fill plate. Although the combination wrench has a magnet so can live on the pillar, no storage is provided for anything else. I now always put everything together for each machine and you can see I have the manual, tools, a used paintbrush for cleaning, a pair



The eagle eyed may spot I have already removed the spring-loaded pin from the 'safety' chuck key, really annoying

of simple eye protectors and the test bar I use for setting up the machine – all in one plastic box easily to hand.

I spent time looking at the manual and playing with the mechanical features of the drill. Overall the quality of castings and finish is excellent but there are a few minor things I was disappointed with. Several labels were not straight – a personal hate – and the quality of surface grinding on the table not as good as I would like although accurate enough. The table rise and fall mechanism would feel more at home on a £100 machine, it is sloppy, poor engineering. However, it does work and table rise and fall adjustments can be done quickly.

The drill feed handles are nice to use and two full rotations gives 150mm travel. There is a nice mechanical depth stop with a quick release so it's easy to go from 10mm to 150mm depth in seconds and is a backup to the electronic depth stop available. A frequent criticism in other reviews has been the chuck capacity of 3–16mm but NOVA have obviously listened and my chuck is 1–16mm and very accurate even if it looks wobbly when rotating due to the loose fit of the operating collar. Another previous criticism was that the audible depth indication was too quiet and could not be heard above the drilling noises. Perhaps this has also been changed as I had no problem hearing it.

### Engineering accuracy

Before starting to use the drill I wanted to check how accurate it was mechanically – it doesn't matter how clever the motor is if you cannot drill accurate, consistent holes. We'll cover doing this in another article but to start I checked chuck run-out – wobble side to side. Doing this at various extensions of the quill – or drilling depths – I found a maximum of 1.5 thousandths of an inch, which is exactly what the Teknatool website says. (Sorry, I still think in imperial but it is 0.038mm for metric brains.) I should mention the controls can be set to use inch or millimetre measurements and I have mine in metric, yes I'm contrary! I then tested the flatness of the

table and the 90° angle setting of the table tilt. Having been set up at the factory and travelled all those miles I found it accurate enough to leave as it was! The test bar in the photo of my tool kit held in the chuck was used for this along with a precision engineer's square and feeler gauges. I then checked for 90° front to back of the table to the drill, something I hardly ever see referred to in setting up a drill, or other reviews, yet if this is not accurate there is probably no adjustment you can make and will never drill holes perpendicular to your workpiece. It was 4 thousandths out over 9 inches of the square, which if my calculations are correct is 0.025 degrees. I think I'll count that as accurate enough! Do remember though that whatever weight you place on the table will cause deflection and decrease the accuracy of this parameter. If you want to drill something really heavy, check if you have a perpendicular drilling or not.

After playing with the various electronic control functions I thought it time to actually do some testing.

### The manual could be better

Generally the manual is OK but the first hurdle was height sensor calibration. With the metric setup I was expected to feed the quill down exactly 10, then 20, etc. to 100mm and at each stage confirm that position in the software, but there is no suggestion how you do this. There are several methods that can be used and are accurate including using a digital height gauge or large external calipers and a Vernier caliper – this process will be described in another article.

The first function I tried was auto start. A couple of clicks to set up and without turning on the motor, you begin to feed the drill down. Once it reaches around 7 to 8mm travel it will start running at the speed you have set; continue to drill and, as you return the drill to its start position, it turns itself off again. Not something to use if drilling to positional marks on your workpiece perhaps, but for repetitive drilling a revelation.



## Performance to spare

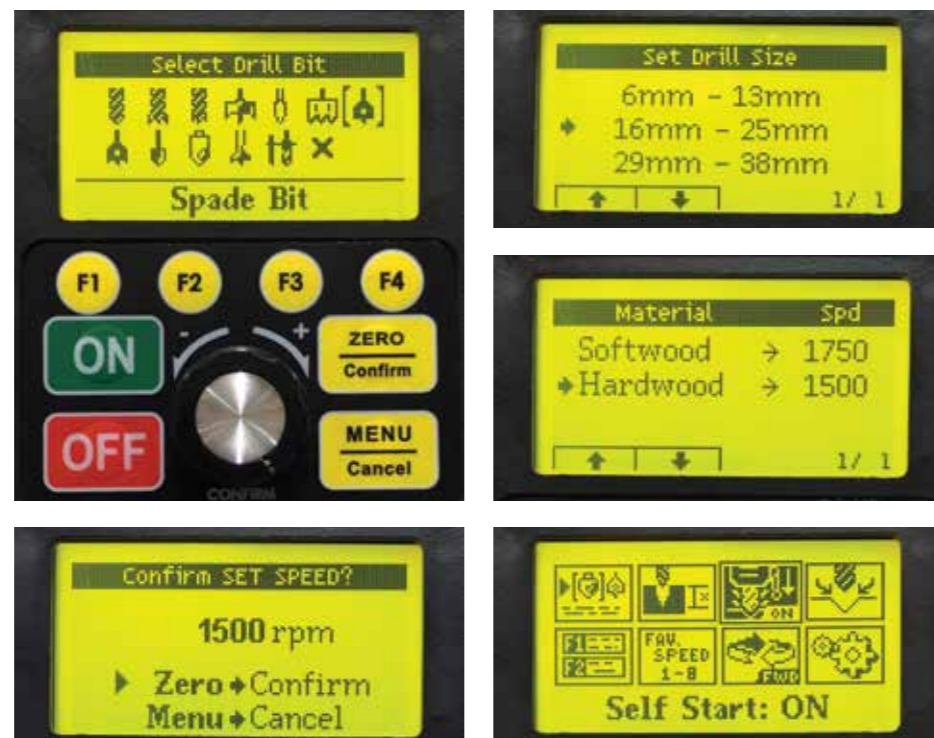
Next I thought I would try out allowing the software to select the correct speed. I also wanted to try out the available power with a typical use so I selected a piece of kiln-dried beech and a previously used – dare I say not in best condition – spade bit.

I drilled a number of holes and the simple comment was: no problem. I tried a couple of really hard downfeeds and watched the display which shows 'load' which never exceeded 20% so the machine was hardly pushed with that

exercise. The speed selected for me also worked well without overheating the bit or burning the wood. You can also use the auto-start function with this feature and also the auto-depth stop.



I am using a 25mm spade bit to drill a beech test piece. The setup sequence shows selecting the drill bit type, size, material being drilled and confirming that speed. I then set the self-start option, which is only two clicks



## So much you can control

The next test was the auto-depth stop. I had ordered the specific table fence accessory for this drill and first impressions were good. It is a nice aluminium extrusion with a well made adjustable stop. The securing knob for the stop is one of the nicest I have seen on this type of kit. I decided to use this to do some gang drilling as I might forming a mortise. As the machine table is cast iron you have the extra option of using fixtures such as the Magswitch feather board. I would normally feed in from the left but space constraints at this time made it slightly difficult. With the workpiece under the drill I lowered the drill bit to touch the surface then hit 'zero'. Raising the drill again, the display showed a negative measurement. I then went into the set depth part of the menu and set 12mm. This would mean the drill stops 12mm below the zero point which I had reset at the workpiece surface. It took me a while to work out how to do this as the manual isn't too clear – or I'm too stupid – but I got there in the end. I used the drill bit selector to choose speed and set the self-start function.

Getting carried away at this point I also decided to change what happens at the selected depth. You can simply have the drill stop, or you can have it stop, reverse for 2 seconds or 6 seconds as you take off the feed. I went for that last option. Oh and I added braking as well.

Did it work? Yes. Position the wood, begin to feed down and the drill starts, begin to drill the wood and beeping indicates approaching the set depth. At the set depth the drill stops, reverses and you can take off the feed. As you approach the top of the feed the drill automatically stops with the braking function doing this almost instantly. The manual recommends also setting the mechanical depth stop as back-up and I did find a slight variation in hole depth due to whatever pressure I was applying as the machine told me I was at depth. But we are looking at maybe half a mm variation only. For doing repetitive blind holes like this it is brilliant.

## The fence and table

Back to the fence and it looks nice and it is useful BUT... it is secured with two top quality Bristol levers but these were frustrating as the underside of the table is not machined so the TEE blocks below catch on the rough casting and the available lever travel is not sufficient to release and allow the fence to slide in the slots to remove. A bit of work with a file to smooth out the slot lower edge would solve this. I think there are bigger issues though.

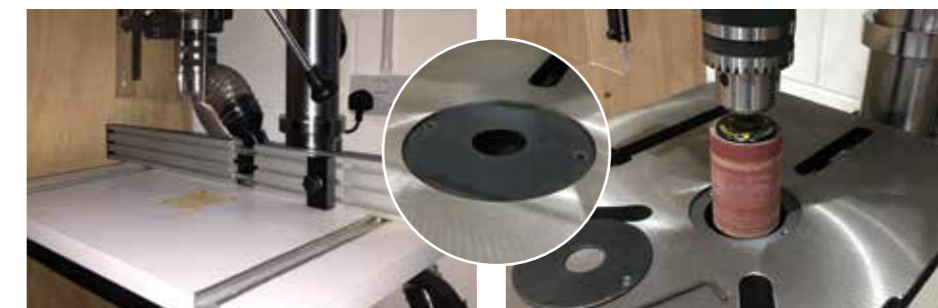
There is no means of having extraction with the fence and I feel it is too short. For a little more money several suppliers have a complete false table, with fences and extraction built in. Mine is from Axminster and will need a little modification to allow clamping to this table layout. It also has the advantage of a removable insert so you can minimise breakout on through holes. The machine table has a removable metal insert, which is not level with the surface so using a false table rectifies that potential problem with thin or short workpieces. Why is this not flush?

The removable table insert does allow for use of sanding drums but only up to 50mm diameter. Personally I do not trust the chuck – fitted with MT2 taper – not to come loose



The nicely made fence does a job but could be better

as any sanding drum will create vibration and it would then drop straight through. An unusual feature of the drill is a quill lock so at any feed depth you can lock and it will stay that depth. When sanding you can then use different parts of the drum without the hassle of moving the table up/down. What I would do is make a box to sit on the table, deep enough to accommodate the full length of a drum and with extraction. If the drum/chuck combination falls out it drops into the box and if I create different diameter inserts I should be able to use my bigger drums and be relatively dust free.



LEFT: A false table such as this can be easily made or bought for around a little more than the Nova fence INSET: The low insert plate is annoying when drilling at the end of a workpiece] RIGHT: Quill lock allows height setting on a sanding drum – maximum size 50mm

## Easy cross-drilling round bar

I played with all the functions but the final one I want to mention is starting a pilot hole. We have all tried to start a hole, maybe in metal, hard plastic or other material where the drill doesn't want to bite, preferring to skate across the surface. I know many woodworkers have few dedicated metalworking tools but still have the occasional need to work with metal and cross drilling round bar is one of the more challenging tasks. Normally you would use a centre punch to create an indent that you hope the drill 'point' fits into. For round bar it is essential to hold it securely so it cannot rotate and for any metal drilling you should always aim to use a proper holding device to locate on the table, not using your hand.

I selected a drill at random which was

4mm diameter, secured the steel bar in the vice and carefully judged the centre point. I did not make a centre 'pop' mark, the drill was acting directly on the metal surface. The pilot hole function starts at a slow speed irrespective of what drilling speed you chose. The software is constantly monitoring the torque being generated by the drill resistance in the workpiece and only when it reaches a certain level does the speed ramp up, in my case to 1000 rpm as chosen by 'set speed'. What it has done is slowly let the drill chisel point work its way into the surface and gradually develop the beginning of the hole. Once it is using most of the drill cutting edges it changes to normal speed mode. It worked amazingly well and as I tend to cross drill bar for several reasons it will get a lot of use.



This shows my machine vice holding the round bar. The vice is secured on the table using parts from a universal clamping set. The inset shows the completed hole

## Conclusion

This is a nicely made piece of kit but with a few very minor cosmetic issues and disappointingly no cross laser or work light are fitted – especially considering the cost. The optional fence is nicely made but better alternatives are available. The drill has excellent power and outstanding drilling depth, and all the mechanical elements to ensure accuracy were superb. The various electronic functions could potentially be dismissed as gimmicks until you use them and realise every one of them is something you always wanted but hadn't known that. There are other features such as a tapping function, four F keys with one-touch speed setting which you can set to your own preferences, a jam protection function to stop the motor and more.

This is an excellent pillar drill that is easy to use after a little experimenting and one I am pleased I chose to buy. If there is one niggling doubt I do have it is longevity. I have a Startrite drill manufactured in the 1960s and so far as I know the only non-original part on it is the drive belt, which I changed. It is probably as accurate now as when made. Will the NOVA electronics still be working in 60 years' time? Actually I won't care because my personal electronics will have stopped working well before then and right now I'm just enjoying using it!

### NOVA Voyager DVR 18in Drill Press

- Power output: 1.75HP / 2HP
- Power supply input: 220-240V, 10-15A, 2HP
- Chuck capacity 1–16mm
- Speed range: 50–5500 rpm
- Overall height: 70%in (1794mm)
- Overall base width: 17%in (448mm)
- Overall base depth: 22%in (578mm)
- Spindle to table min distance: 6%in (155mm)
- Spindle to table max distance: 28%in (724mm)

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[www.turners-retreat.co.uk](http://www.turners-retreat.co.uk)



The lack of a work light is easily fixed courtesy of IKEA and about £6!