

# The Beginnings of a Star...

Introducing The New **nova**<sup>™</sup> Nebula Lathe!

***Our latest Nova 18"  
Heavy Duty Lathe  
Powered by our unique  
DVR Direct Drive Smart Motor  
Computer Control Technology***

- ***Incredible 2.5 HP Direct Drive High Torque Motor***
- ***Powerful Computer with a huge set of software controlled features not available on any other lathe brand worldwide***

Powered by

**STRIATECH.**



## NOVA NEBULA FEATURES

Incredible 2.5HP of  
DVR  
Direct Drive Power!  
To handle any turning  
project, large or small.  
No pulleys, no belt  
changes,  
0 – 4,000 rpm by simply  
adjusting speed control  
knob.

Headstock 360Deg.  
Swivel & Slide along  
Bed for customized  
turning position

Powerful Computer  
drives unique  
software menu of user  
controlled features

Up to 80% Energy  
Savings compared to  
Conventional AC/DC  
lathes



18" (457mm) capacity  
over bed  
25" (640mm)  
capacity  
Between Centres

Over 4.5" (115mm)  
Tailstock Quill Travel  
Handy Tailstock  
centres storage

Wired, Movable  
Remote Control with  
EMC Safety Stop

M33 Spindle with  
ASR Eurolock for  
safe reverse turning

Heavy Duty Cast Iron &  
Steel Stand for  
maximum rigidity and  
vibration dampening

- Direct high Torque Drive
- No transmission power lost through belts & pulleys – up to 20% in other lathe brands
- Up to 80% power saving, computer optimizes power required
- Quick fine/coarse adjustment over entire speed range
- 8 Programable speed settings
- Large/small rpm screen display
- Electronic Brake assist option
- Speed Chart Guide Menu
- USB Port for Firmware & Software future upgrades
- Wireless Remote Enabled for future applications
- Diagnostics: On screen error mode for fast fault finding.
- Menu Available in Three Languages: English, German, French
- SAFETY FEATURES:
- Chisel Jam Sensor Auto shutdown
- Excess Vibration Sensor Auto Shutdown
- Start up Speed Ramp options safer & useful for larger work
- Pin Code: Lock out unauthorized Use

***Powerful Computer enabled  
Features not found on any other  
Brand lathe***



**Lathe Specifications**

	Metric	Imperial
Swing Over Bed	457.2mm	18"
Distance Between Centres	640 mm	25"
Overall Size	1200mm (L) x 600mm (w) x 1250mm(H)	47.2" (L) x 23.6" (w) x 49.2" (H)
Package Size	1280mm (L) x 550mm (w) x 737mm (H)	50.4" (L) x 21.7" (w) x 28.9" (H)
Net Weight	206 Kg ± 2 Kg	454.2 lb ± 4.4 lb
Gross Weight	241 Kg ± 2 Kg	531.3 lb ± 4.4 lb
<b>Headstock</b>		
Spindle Thread	M33 x 3.5 RH*	1.25" x 8TPI
Headstock Spindle Taper	Morse Taper #2 (MT2)	
Headstock Swivel	360° With detent positions at: -45°, 0°, 22.5°, 45°, 90°, 180°	
Headstock Slidable	Sliding Headstock	
Spindle Index	24 divisions (15 degrees apart)	
<b>Tailstock</b>		
Quill Taper	Morse Taper #2 (MT2)	
Quill Travel	120mm	4.7"
Hole Through Tailstock	12.5mm	0.48"
<b>Tool Rest</b>		
Length	300mm	12"
Shaft Diameter	25.4mm	1"
<b>Motor Specifications</b>		
Motor Type	DVR Direct Drive Smart Motor	
Motor Speed Range	50 RPM ~ 4000 RPM	
Input Frequency	50Hz	60 Hz
Motor Power Output	1.8KW (2.5HP)	1.5KW (2.0HP) *
Input Voltage	220~240V	110~120V
Input Current	10A (max)	15A (max)

\* M33 x 3.5 RH thread spindle only available in European models. All other market models will have the 1.25inch x 8 TPI spindle.

Feature Name	Description
<b>DIGITAL VARIABLE RELUCTANCE (DVR) ELECTRONIC DRIVE</b>	The DVR motor uses smart motor technology to provide an incredibly smooth and powerful drive. The controller constantly monitors the spindle position and maintains optimal spindle speed. Additional power is added as it senses extra load from the tool.
<b>POWER TO TURN AND BURN</b>	220~240V / 10A 1.8KW (2.5HP) 110-120V / 15A 1.5KW (2.0HP) * *For 110V / 15A, the motor power is derated to 2.0 HP by current limit in software. To get 2.5HP, the input power is required change to 220V/10A or using dual 110V input.
<b>Slidable 360° SWIVEL HEADSTOCK</b>	Slidable headstock Lock at any position, plus detent locating positions at 0°, 22.5°, 45° and 90°. High accuracy and easy swivel
<b>SOLID BED STRUCTURE</b>	CAD designed webbing to absorb vibration throughout the bed length. Exceptional structural strength.
<b>8 FAVOURITE SPEED FUNCTION</b>	Program your favourite speeds for faster and more efficient project set ups
<b>FLEXIBLE CAPACITY TO MATCH YOUR PROJECT</b>	- 18" / 457mm Capacity Over Bed - 35" / 889mm Capacity Outboard (with optional outrigger accessory) - 25" / 640 mm Between Centres
<b>SAFETY SENSING FEATURE</b>	It senses faults in the setup and advises of safety issues - such as chisel dig in and spindle lock. It then instantly shuts down power to the spindle.
<b>ENERGY EFFICIENT</b>	Intelligent (computer controlled) motor only draws as much power as it needs for the application
<b>INCREDIBLE VARIABLE SPEED RANGE</b>	50 RPM - 4,000 RPM
<b>WARRANTY</b>	* 5 Year Warranty on Parts and Components * 2 Year Warranty on Motor and Electronics * Restrictions apply.

Brian Latimer  
November 2021

Nebula Base Line Copy Material to develop pamphlets, video material etc.

Possible Headliners:

The same revolutionary & intelligent motor design that drives the Tesla Model 3, Powers our NOVA NEBULA!!

The Nova Nebula's advanced SR (switched reluctance) digital motor technology combines with a powerful computer to deliver these incredible features which make it unique and superior to all other wood lathes on the market

- Direct Drive: Gamechanger #1 The lathe drive spindle is the actual solid steel rotor of the motor – the stators part of the headstock – seamless simplicity!! No gears, no pulleys, no belts – just smooth power delivered directly to your work piece. (Typically 20% of usable power is lost in conventional AC/DC motors through the traditional arrangement of belts, pulleys, gears needed to bridge the speed range – not to mention all the time consuming changing and adjustments necessary). All that's needed is a twist of the speed dial to go from 0 to 4,000 rpm. How is this possible? Our DVR (Digital Variable Reluctance) design has a finely tuned 'torque curve' that delivers constant power over a wide speed range – with AC/DC motors, they can only run at their rated speed with any efficiency.
- DVR does not have any permanent magnets but creates a magnetic force by energizing the stators in sequence ('switching') so the steel rotor poles are constantly rotating to align with the next energized stator.

## Nebula Copy Material

- **Intelligent Computer Control: Gamechanger #2** ‘Switching’ of the DVR motor poles is controlled by a powerful computer which can control the switching frequency, the level of power delivered, and many other functions, through feedback from the rotational sensor array. The basic drive principles are simple but our intelligent software programs to seamlessly work all this out is the very complex ‘brain’ of our DVR Motor.
- **Software functions: Nebular Software applications open up a whole new world of lathe control functions that simply don’t exist in traditional wood lathes.**
- A superior, powerful direct drive that delivers all the power you want with smooth vibration free efficiency, over a huge speed range, simply by adjusting the speed knob along with a whole host of very useful additional applications at your finger tips.
- It’s like old telephones compared to modern smartphone technology!
- It’s the ‘magic box’ experience you have with smart phones and laptops – but applied to your traditional wood lathe, to give you a wholly new, modern turning experience.
- If you can use a smartphone, you will find Nebula’s smart multi-function controller a ‘breeze to use’.

- SOFTWARE CONTROLLED: Most of the following features are easily and quickly set using the menu on screen. This is totally unique to Nebula and DVR lathes. Traditional AC/DC lathes only control the speed
- **THREE LANGUAGE MENU:** Not an English Speaker! The software menu is also in German and French. You can easily switch between languages.
- **ELECTRONIC BRAKING:** Adjustable electronic braking can be set in the menu – from soft 1% up to a strong 25%. The strongest setting provides faster braking than using the EMS (Emergency Stop Button) alone. A basic aspect of woodturning is to stop the rotating workpiece to examine cut and shaping progress. Stopping the lathe quickly saves time and more convenient and safer than by hand or handwheel.
- **SPEED MENU:** Handy speed chart recommends speed at workpiece diameter for roughing out or finishing cuts. Takes the guesswork out setting the optimum cutting speed. And what a speed range 50 – 4,000rpm – a far greater speed range than all other lathes.
- **SPEED KNOB:** Coarse or fine setting for speed adjustment. Press knob in to quickly speed up or down, then finely adjust to reach the speed required.



## Nebula Copy Material

- **POWER SAVING:** Beats a AC/DC motor hands down saving power! The Nebula has the potential to save up to 80% power compared to regular AC/DC powered lathes. How? It's all got to do with that powerful computer controlling the motor. Its mission is to monitor the motor conditions to provide just the right amount of power to maintain the speed set when varying loads (e.g. chisel cutting force) is applied to the workpiece. As the cutting force varies, small cuts, larger cuts, pauses in cutting – the computer only feeds enough power to meet the conditions and maintain the speed. So as the load varies, the power that is used varies also. This is totally unlike a AC/DC motor, when it is switched on the full, unvarying power is delivered, not matter what. Switched on under no load, the AC/DC just keeps delivering full power, gets all hot and bothered and – no power savings – while the Nebula DVR motor is just idling under no load hardly uses any power at all!!.
- Wood turning applications is an ideal use of our DVR Motor to save power!!

- **SAFETY: POWER JAM SENSOR:** The Nebula has a 'Chisel Dig In/Work Jam Sensor built in: A Chisel Jam or catch is a normal woodturning hazard which can be dangerous with the chisel being ripped out of the wood or flung about the workshop. Ouch! The Nebula has a pre-programmed 'power envelope' – if maximum power is exceeded (during a chisel 'dig in') the motor immediately shuts down. Withdrawing the chisel, allows the power on, and safe turning can be resumed. **Traditional lathes do not have this safety feature.**
- **SAFETY: VIBRATION SENSOR:** The vibration sensor detects excessive vibration outside the parameters of normal turning. Typical situation is when a bowl suddenly breaks apart while turning. This causes immediate out of balance, excessive and dangerous vibration. The sensor automatically detects this condition and immediately shuts down power to the lathe. Often it's dangerous for the user to try to turn off the power – the sensor automatically takes care of it. The sensor has three settings: low, medium, high – so turners can set their own 'vibration safety zone'. **Traditional lathes do not have this safety feature.**

- **SAFETY: PIN CODE LOCK:** Set a personal pin code in the menu. This then locks any unauthorized users out of starting the machine. This is an essential safety feature when used in a class setting or with small children having access to the workshop. No other lathe has this safety feature.
- **SAFETY: MENU PIN CODE LOCK:** The menu can be locked to prevent changes while the machine is running. This can be handy in a class setting with multiple users.
- **SAFETY:** When Reverse is engaged, a warning message appears on the screen to warn user – reverse has been engaged.

- **CUSTOMISE SPEED SETTINGS:** There are 8 speed customizable speed settings in the menu: This is very handy in pre-setting your favourite turning speeds or pre-setting the speeds for a project, for example, a slow roughing out speed, faster shaping speeds, fine finishing speed, a sanding speed, a very slow finish application speed. So you can go from one speed to the next at the touch of a button – not have to dial manually and slowly adjust up to the next speed you want.
- **SLOW DRYING MODE:** Around 50rpm. This slow speed is for applying finishes to the completed work. Limits a liquid finish spraying out over the workshop
- **CUSTOMISED SHORT CUT FUNCTION KEYS:** There are 4 keys to short cut to functions you want to use frequently, for example, Braking, speed chart, speed ramp settings, number size display
- **LARGE/SMALL NUMBER DISPLAY:** You can switch to a Large number display to keep an easy eye on the speed. The small number display along with speed shows short cut definition settings, set speed compared to run speed

- **SPEED RAMP:** Nebula has three Speed Ramp Settings: These are in the menu and are customizable. Small Diameter mode: When you want to ramp up quickly to the speed set. Normal mode: This covers most turning situations where a moderate speed ramp up is required. Extra Large Mode (X-Lrg/unbalance): This is for very a large or heavy or unbalanced workpiece where you want it slowly ramp up to the set speed.
- **SMOOTH TURNING:** Nebula delivers the Best smooth turning experience. How? With a unique range of factors all centered on delivering the smoothest turning experience.
- **Direct Drive:** All the vibrations that always come with belts, pulleys and gearing – are completely eliminated.
- **Constant Speed:** The computer is receiving feedback from the motor's optical sensor array, on power, load, speed – for example at 2,000 rpm the computer is receiving 24,000 signals per minute, 400 per second: fine adjustments of power and switched electronic pulses to keep the spindle speed to within 1-2% of set spindle speed. This allows the chisel optimum cutting conditions to maintain an ultra smooth cut.

- **POWER & TORQUE:** The Nebula's unique DVR Drive design creates far more torque (force) at the work face. The Nebula has plenty of power, developing a whopping 2.5HP output at the spindle. But that power has to be focused into a usable 'force' (torque) at the workface. Because the DVR motor controls the varying amount of power to the stators and the switching frequency it is possible to design a torque curve (algorithm) that is especially suited to a woodlathe application, where high constant torque is needed in the lower rpm speed range, lots of torque needed to turn a Large Wood Piece.
- A traditional AC/DC motor is only efficient, developing maximum torque around a narrow speed band – with torque and efficiency falling off rapidly above and below that band. Imagine a 'Bell Curve' of efficiency. That is why AC/DC motors need all the panoply of belts, pulleys and gears to compensate.
- That's why an AC/DC motor when a chisel force is applied will drop off in power delivery, efficiency and speed. This is where the DVR motor excels in intelligently being able to adjust power to maintain speed and torque.
- These DVR advanced characteristics mean they can have the torque performance of much higher rated HP AC/DC motors.

- **DIAGNOSTICS DISPLAY:** Shows the error code and names the problem. This helps with faster detection and correction of fault.
- **Thermal Protection Sensor:** There is a thermal protection of the Nebula's electronics and motor. If in the unlikely event the motor is over heated (very unlikely as it has heavy duty industrial Class F grade windings) it will automatically shut down to protect the motor and electronics and display: Error: Overheated.
- **USB PORT:** There is a USB port for any upgrades of the firmware that become available.
- **WIRELESS ENABLED:** For future Nova applications.
- **REMOTE CONTROL:** RPM Display, Speed Control Knob, On/Off, also works with braking function. EMS: Emergency Stop Switch. Strong Magnet backing so it can be conveniently positioned for user.