

# NOVA

## Galaxi DVR 1644™

### Wood Lathe



SKU 55214  
Publication No. 122-0816-007

**Smart Tools, Powerful Solutions**

# NOVA GALAXI

SKU 55214

**nova**  
Smart Tools, Powerful Solutions

This lathe combines the best features of larger lathes – power, capacity and capability with state of the art technology to make your turning more efficient, fun and safer. The NOVA DVR Galaxi is the most versatile lathe on the market. The Galaxi has improved speed range, easier controls, and comes standard with a cast iron stand.



## FEATURES/BENEFITS:

- ▶ Headstock can slide or rotate along the bed
- ▶ Solid Cast Iron Stand included with wide footprint for even greater stability and vibration dampening
- ▶ Dial knob for easier and more precise speed adjustment
- ▶ E-Stop button for safer use

## Motor Specifications:

- ▶ DVR High Torque Motor, Electronic Variable Speed
- ▶ 1.75HP Direct Drive
- ▶ Single Phase Input Supply
- ▶ 220-240V, 10-15A, 2 HP (requires optional plug change)
- ▶ 110-120V, 15A, 1.75 HP

## Specifications:

- ▶ **Capacity:** 16" (400mm) Swing over bed. 29" with additional outrigger accessory
- ▶ **Between Centers:** 44" (1120mm)
- ▶ **Swivel Headstock:** 360° with present pin lock -90°, -60°, -30°, 0°, 30°, 60°, & 90°
- ▶ **Spindle Thread:** 1 1/4" 8TPI
- ▶ **Spindle Taper:** 2MT
- ▶ **Tailstock Quill Travel:** 3" (80mm)
- ▶ **Quill Type:** Self-Ejecting
- ▶ **Speed Range:** 100-5000rpm

▶ **Powerful:** The DVR motor is small and compact but delivers a whopping 1.75HP (2HP 220V) of direct drive turning power.

▶ **Incredibly Smooth Turning:** The spindle rotation is so closely controlled and monitored by computer and direct DVR drive motor setup eliminates pulleys, belts and the vibration they cause.

▶ **High Torque:** Delivers high torque from its start speed making it well suited for low speed turning. There is no belt drive (typically up to 20% of power is lost through the transmission system alone) - full power output is available at the spindle (which is actually part of the motor).

▶ **Intelligent Drive:** The computer analysis (100s of time per second) both the spindle position and the power required to maintain a given speed. As cutting tool pressure is increased the drive adds more power. Unlike a 'dumb' AC or DC where there is no connection between the power supplied and the actual spindle requirements.

▶ **Up to 50% Energy Efficiency:** The DVR only draws as much power as necessary - this means it is very efficient in its power use and runs very cool.

▶ **Low Maintenance:** The DVR is a simple motor - the complexity is in the electronics. It has few mechanical parts with no belts, pulleys - the motor and lathe headstock are a fully integrated whole. There are no brushes or magnets and only one set of very robust stator windings. The motor insulation is very high class F specifications for long life (Class F: heavy use industrial, stator windings will be protected up to 155 degrees Celsius)

## WELCOME:

Thank you for choosing our NOVA GALAXI DVR 1644 Lathe and welcome to the NOVA product family. Your choice shows that you want the best for your woodturning and you recognize the superb DVR drive technology and the host of other unique features the NOVA GALAXI DVR 1644 Lathe has to offer.

We strive to achieve the best value for your money – providing quality, innovative features, a wide range of accessories – plus comprehensive, ongoing support (latest manuals downloadable from our website, newsletters, projects, etc.). We are only a phone call or email away with technical advice or assistance on the operation of your lathe or your woodturning queries.

Please feel free to contact us about any aspect of our products or service – we regard our customers as our best development and improvement team – we would love to hear from you!

Once again, welcome to the “NOVA Family.” We trust that you enjoy our products and hope they enhance the pleasure you experience from the wonderful craft of woodturning!

Best Regards,

*Brian Latimer*

Marketing Director  
Teknatool International Ltd

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Or you can contact the retailer where you purchased your NOVA GALAXI DVR 1644 Lathe, for contact details, please see our website [www.teknatool.com](http://www.teknatool.com).

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# GENERAL SAFETY RULES



**WARNING!** Failure to follow these rules may result in serious personal injury or death.

**IMPORTANT:** Before switching the spindle on, ALWAYS check the machine for the correct setting and speed.

- 1. FOR YOUR OWN SAFETY, READ THE MANUAL BEFORE OPERATING THE TOOL.** Learn the machine's application and limitations, plus the specific hazards particular to it.
- 2. ALWAYS USE A FULL FACE SHIELD-Strongly recommended** (must comply with ANSI STANDARD Z87.1 -USA) Everyday eyeglasses usually are only impact-resistant, and safety glasses only protect eyes. A full face shield will protect the eyes and face. Also, use face or dust mask if cutting operation is dusty.
- 3. WEAR PROPER APPAREL.** Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
- 4. USE EAR PROTECTORS.** Use ear muffs for extended period of operation. Use muffs rated to 103 DBA LEQ (8 hour).
- 5. DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted. The DVR Galaxi Lathe is intended for indoor use only. Failure to do so may void the warranty.
- 6. KEEP WORK AREA CLEAN.** Cluttered areas and benches invite accidents. Build-up of sawdust is a fire hazard.
- 7. KEEP CHILDREN AND VISITORS AWAY.** The Nova DVR Galaxi is **not recommended** for children and infirm persons. Such personnel and onlookers should be kept a safe distance from work area.
- 8. MAKE WORKSHOP CHILDPROOF** with locks, master switches, or by removing starter keys.
- 9. GROUND ALL TOOLS.** If the tool is equipped with a three-prong plug, it should be plugged into a three-hole electrical receptacle. If an adapter is used to accommodate a two-prong receptacle, the adapter plug must be attached to a known ground. Never remove the third prong.
- 10. MAKE SURE TOOL IS DISCONNECTED FROM POWER SUPPLY** while the motor is being mounted, connected, or reconnected.
- 11. DISCONNECT TOOLS FROM WALL SOCKET** before servicing and when changing accessories such as blades, bits, cutters and fuses etc.
- 12. AVOID ACCIDENTAL STARTING.** Make sure switch is in the "Off" position before plugging in power cord.
- 13. NEVER LEAVE MACHINE RUNNING UNATTENDED.** Do not leave machine unless it is turned off and has come to a complete stop.
- 14. KEEP GUARDS IN PLACE** and in working order.
- 15. USE CORRECT TOOLS.** Do not use a tool or attachment to do a job for which it was not designed.
- 16. USE RECOMMENDED ACCESSORIES.** The use of improper accessories may cause hazards.
- 17. DON'T FORCE THE TOOL.** It will do the job better and be safer at the rate for which it was designed.
- 18. MAINTAIN TOOLS IN TOP CONDITION.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
- 19. NEVER STAND ON TOOL.** Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.
- 20. REMOVE ADJUSTING KEYS AND WRENCHES.** Form a habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
- 21. DON'T OVERREACH.** Keep proper footing and balance at all times.
- 22. DIRECTION OF FEED.** Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
- 23. PAY ATTENTION TO WORK.** Concentrate on your work. If you become tired or frustrated, leave it for a while and rest.
- 24. SECURE WORK.** Use clamps or a vice to hold work when practical. It's safer than using your hand and frees both hands to operate tool.
- 25. CHECK DAMAGED PARTS.** Before further use of the tool, any part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, mounting, and any other conditions that may affect its operation. Any damaged part should be properly repaired or replaced.
- 26. DRUGS, ALCOHOL, MEDICATION.** Do not operate machine while under the influence of drugs, alcohol, or any medication.
- 27. DUST WARNING.** The dust generated by certain woods and wood products can be harmful to your health. Always operate machinery in well-ventilated areas and provide means for proper dust removal. Use wood dust collection systems whenever possible.
- 28. DO NOT MODIFY OR USE LATHE FOR USES OTHER THAN FOR WHICH IT WAS DESIGNED.**

## ADDITIONAL SAFETY RULES FOR WOOD LATHES



**WARNING!** Failure to follow these rules may result in serious personal injury.

- 1. SEEK INSTRUCTION.** If you are not thoroughly familiar with the operation of wood lathes, obtain advice from your supervisor, instructor, or other qualified person. Instruction from a qualified person is strongly recommended.
- 2. DO NOT OPERATE LATHE** until it is completely assembled and installed. Follow instructions and recommendations.
- 3. FOLLOW ELECTRICAL CODES.** Make sure wiring codes and recommended electrical connections are followed and that the machine is properly grounded.
- 4. WHEN REPLACING THE FUSE** (on relevant models), completely isolate power when removing the fuse. It is imperative the plug is removed from the mains supply before the fuse is removed. Replace fuse cap before reconnecting to mains.
- 5. DO NOT OPEN THE SWITCH AND REAR COVERS.** Components can carry dangerous voltages even when isolated from mains power.
- 6. ALWAYS ENSURE SPINDLE FIXTURES (E.G. FACEPLATES ETC.) ARE LOCKED TO SPINDLE** in case spindle reverse is engaged. Otherwise they will unwind from spindle. See "Mounting a Faceplate to a chuck" section.
- 7. WHEN SPINDLE REVERSE IS ENGAGED DO NOT USE CHISELS OR CUTTING TOOLS - USE FOR SANDING ONLY**
- 8. KEEP WORK AREA CLEAN.** Do not turn the lathe on before clearing the lathe of all objects (tools, scraps of wood, etc.). Keep the nearby area and floor clear of debris.
- 9. CHECK SET-UP** with spindle off. Examine the set-up carefully and rotate the work piece by hand to check clearance and check speed is correctly selected before turning on spindle.
- 10. DO NOT MAKE ADJUSTMENTS** when the lathe or work piece is turning. Make all adjustments with power OFF.
- 11. TIGHTEN ALL CLAMP HANDLES** on the headstock, tailstock, and toolrest before operating lathe.
- 12. EXAMINE WORK PIECE** and glue joints before turning to make sure it has no defects that would cause it to break when turning.
- 13. ALWAYS CHECK CORRECT SPEED IS SELECTED BEFORE SWITCHING ON SPINDLE.**
- 14. USE LOWEST SPEED** when turning a new or unbalanced work piece.
- 15. TURN AT RECOMMENDED SPEED.** Always operate the lathe at the recommended speeds. Consult this manual for suggested speeds.
- 16. ADJUST TOOLREST** close to the work piece. Before turning, revolve the stock by hand to make sure it clears the rest. At intervals, stop the lathe and readjust the Toolrest.
- 17. KEEP TOOL ON TOOLREST.** The lathe tool or chisel should be on the Toolrest before the lathe is turned ON. Tools should remain on the Toolrest whenever the tool is engaged in contact with the work piece.
- 18. REMOVE TOOLREST** when sanding or polishing so fingers do not get pinched.
- 19. USE CORRECT LATHE TOOLS.** Do not use spindle turning chisels for faceplate mounted work, and vice versa. Spindle turning tools used for faceplate mounted work may grab the work piece and pull the chisel from your control.
- 20. WHEN ROUGHING STOCK** do not jam the lathe tool or chisel into work piece or take too big a cut.
- 21. DO NOT POUND WORK PIECE** into headstock drive (spur) center when turning between centers. Pound the drive center into the work piece with a soft mallet before installing it between centers in the lathe.
- 22. DO NOT USE TAILSTOCK** to drive work piece into the drive (spur) center when turning between centers. Secure work between centers with light pressure from the tailstock quill action.
- 23. FASTEN STOCK SECURELY BETWEEN CENTERS.** Make sure the tailstock is locked before turning on the power.
- 24. NEVER LOOSEN TAILSTOCK** Quill or Tailstock while work piece is turning.
- 25. CORRECT USE OF FACEPLATE.** When faceplate turning, make sure work piece is securely fastened to the faceplate and that appropriate size faceplate is used to support the work piece. Any screw fasteners must not interfere with the turning tool at the finished dimension of the work piece. Rough-cut the work piece as close as possible to finished shape before installing on faceplate.
- 26. DO NOT OPERATE LATHE IF DAMAGED OR FAULTY.** If any part of your lathe is missing, damaged or broken, in any way, or any electrical component fails, shut off the lathe and disconnect the lathe from the power supply. Replace missing, damaged, or failed parts before resuming operation.
- 27. ADDITIONAL SAFETY INFORMATION** regarding the safe and proper operation of this product is available from the National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611 in the Accident Prevention Manual of Industrial Operations and also in the Safety Data Sheets provided by the NSC. Also refer to the American National Standards Institute ANSI O1.1 Safety Requirements for Woodworking Machines and the U.S Department of Labor OSHA 1910.213 Regulation.

# NOVA GALAXI DVR 1644 LATHE SPECIFICATIONS

**Size:** 1875mm(L) x 495mm (W) x 1260mm(H)  
73.8"(L) x 19.5" (W) x 49.6"(H)

**Weight:** 204 kg (450 LB)

**Swing Over Bed:** 405mm (16in.)

**Distance Between Centers:** 1120mm (44in.)

## Headstock:

- Spindle Thread: M33 x 3.5 RH <sup>(1)</sup>  
or 1.25" x 8 TPI RH <sup>(2)</sup>
- Headstock Spindle taper: #2 Morse Taper
- Headstock Swivel: 0 to 360 degrees, with detents at -90°, -60°, -30°, 0°, 30°, 60°, 90° and 180°.
- Outboard End Internal Thread: M20 x 1.5 LH
- Spindle Index: 24 divisions (every 15 degrees)
- 15mm through-hole through Headstock
- Motor Type: SRM
- Motor Power: 1250W, 1.75HP
- NO Transmission, Direct Drive

## Speeds (rpm):

- 100 – 5000 (see "Running the Lathe" section for speed control)

## Tailstock:

- Quill Taper: #2 Morse Taper
- Quill Travel: 80mm (3in.)
- Self-ejecting Quill
- Hole through Tailstock: 12.5mm (31/64in.)

## Toolrest:

- Length: 300mm (12in.)
- Shaft Diameter: 25.4mm (1in.)

## Favorite Speeds:

- 8 programmable favorite speeds

## Standard Accessories:

300mm (12") Toolrest, 150mm (6") Faceplate, Spur Center, Live Center, Lathe Handwheel, and Knockout Bar + Holder

## Optional Accessories:

- Precision Midi Chuck
- G3 Chuck
- SuperNOVA2 Chuck
- Infinity Quick Change System
- Titan Chuck
- 80mm (3in.) Faceplate
- 100mm (4in.) Toolrest
- Woodsurfer Bowl Toolrest
- Live Center System
- Faceplate rings
- Wireless Remote
- Outrigger

## Notes:

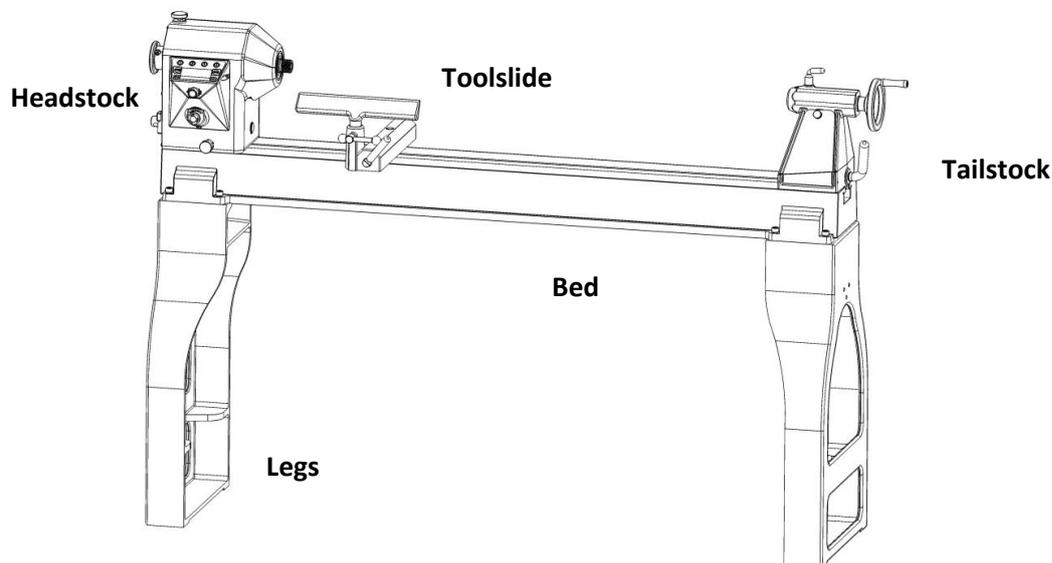
- (1) Applicable to Europe
- (2) Applicable to United States, Canada, Australia, New Zealand & South Africa.



**Directives this equipment complies with:**  
Low voltage directive (LVD) 73/23/EEC + 93/68/EEC+2006/95/EC  
Machinery directive (MD) 89/392/EEC + 91/368 EEC + 93/68/EEC+2006/42/EC  
Electromagnetic compatibility directive (EMCD) 89/336/EEC + 92/31/EEC + 93/68/EEC+2004/108/EC  
Harmonized Standards applied in order to verify compliance with Directives: EN 61029-1:2009  
Low Voltage Directive and Machinery Directive  
EN 55014-1:2007  
EN 55014-2:2009  
EN 61000-3-2:Ed3 2006  
EN 61000-3-3:1995 A1 + A2

Signed Spencer M. Herran Dated 07/23/2015

Spencer Herran  
Research and Development Engineer



# SETTING UP YOUR WORKSHOP

## Workshop Requirements

<i>Consideration</i>	<i>Recommendation</i>
Lathe location	Locate the NOVA GALAXI DVR 1644 close to a power source in an area with good lighting. Leave enough clearance on all sides of the lathe; allow for clearance when the headstock is swiveled. Other machines in your shop should not interfere with the operation of the lathe.
Lighting	Your shop should have adequate lighting. The work area of the lathe should be well lit; there should not be shadows cast on your work. If possible, locate near a window. A portable spotlight may be helpful.
Electrical	The NOVA GALAXI DVR 1644 requires the appropriate power outlet nearby to power the motor. Wiring and outlets should adhere to local electrical codes. If in doubt, seek advice from an electrician. Minimize use of extension cords. See "Connecting to power" section for Surge Protector requirements.
Ventilation	Your shop should be adequately ventilated. The degree of ventilation will vary based on the size of the shop and the amount of work done. The use of dust collectors and filters will minimize risks to your health.

## ASSEMBLING THE NOVA GALAXI DVR 1644



**WARNING!** Seek help when moving the NOVA GALAXI DVR 1644 lathe and its heavier components to help avoid risk of injury. Read and understand the contents of this manual and recommended procedures before attempting to assemble or operate the Lathe or its parts.  
DO NOT CONNECT POWER ON LATHE UNTIL FULLY ASSEMBLED.

### Unpacking and Preparing the Lathe

1. Open shipping container and set aside shipping materials. Keep all materials until lathe is assembled and ensured to be operational.
2. Remove loose components, and remove fasteners which are securing lathe components to shipping container.
3. For easier lifting of heavy components, take apart walls of shipping container, remove Phillips head screws and stop plates at ends of bed, and slide headstock, toolrest, and tailstock off bed before lifting bed from container.
  - Can stage bed on sawhorses or similar sturdy objects to hold up bed while attaching legs, making sure to safely secure all parts to keep from falling.
4. Thoroughly clean off anti-rust coating from all protected components.

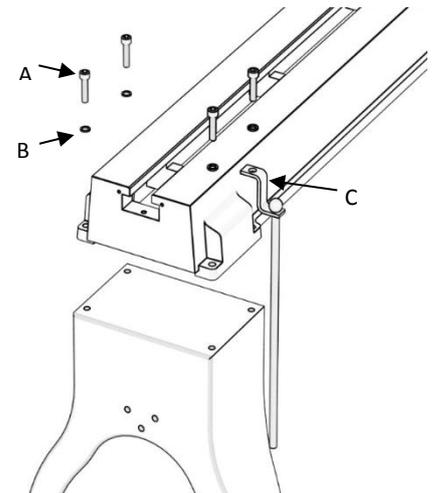


Fig. 1

### Assembling the Bed, Legs and Knockout Bar Holder

5. Attach 4 feet to bottom of legs using supplied 5/8" hex nuts before securing legs to bed.
6. Attach legs to bed using all 8 supplied M10 socket head cap screws (A) and spring washers (B), one leg at a time (see Fig. 1).
  - Knockout bar holder (C) can be installed using any of the included M10 socket head cap screws.
7. Once legs are fastened to bed, bed weight can be carefully placed on legs; screws must be fully tightened down before further assembly.

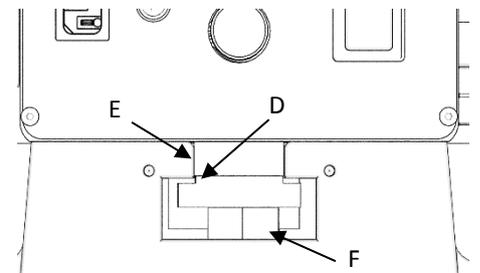


Fig. 2

### Mounting the Headstock, Toolrest and Tailstock onto the Bed

8. Slide headstock, toolrest, and tailstock onto bed, ensuring lock plate (D) is correctly lined up with bed way (E), as shown in Fig. 2.
9. Replace stop plates on both ends of bed.

### Connecting to Power



**WARNING!** Improper connection of the motor can result in a risk of electrical shock.

10. The supplied power cord will have a three-prong plug with a grounding prong. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with local electrical codes.
  - **FOR 115V ONLY:** A temporary adapter can be used to plug into a two-pole outlet if a three-prong outlet is unavailable (See Fig. 4). The ground tab on the adapter must be connected to the screw on the outlet for proper grounding. This adaptor should only be used until a qualified electrician can install a properly grounded outlet.

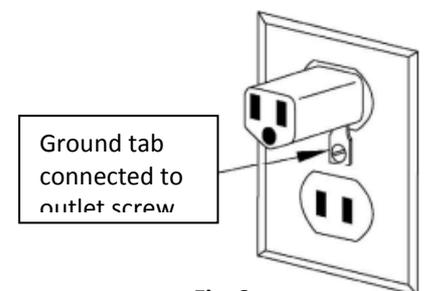


Fig. 3

If it is necessary to use an extension cord, the cord should be grounded and in good condition. Use an extension cord with a heavy enough gage and to avoid power loss and over-heating, and it is not recommended to use a long extension cord.

**NOTE:** Ground Fault Interrupters (GFI's) are generally not compatible with Variable speed motors. If you wish to use a GFI or RCD, select a unit that is confirmed for use with a Variable speed motor using capacitor charge.



**IMPORTANT:** A Surge Protection Device must be used, rated to at least 15 amps (for 115V countries, USA and Canada) or 10 or 15 amps (230V countries). This is to protect the DVR.electronics from electrical spikes or surge

## USING THE GALAXI DVR 1644 WOOD LATHE



### DVR Variable Speed Controller

The DVR Motor drive is a unique type of motor and controller where the motor and controller interact. The motor provides data to the controller on its position and load conditions.

The motor provides high torque, even at a low rpm, and extremely accurate speed control.

### DVR Drive Parameters

**Motor Type:** Switched Reluctance

**Motor Power:** 1250W, 1.75HP

**Motor Speed Range:** 100 – 5000rpm

**Default set speed:** 500rpm

**Accuracy of speed stabilization:** <2.5%\*

**Speed Regulator Type:** PI

**Reverse:** Yes

**Speed Control:** Dial and preset favorite speed buttons

\* **Note:** speed variation will be greater at lower speeds due to less positional data available for the controller to process.

### Positioning the Headstock on the Bed

The headstock on the NOVA GALAXI DVR 1644 Lathe uses a cam lock assembly for securing in place along the bed. To move the headstock:

1. Insert the knockout bar into the through hole in the locking shaft and loosen the shaft (shaft can be tightened by rotating either direction, so rotate the opposite direction it was tightened).
2. Move the headstock along the bed to desired position.
3. Re-tighten the locking shaft.
4. Ensure the headstock is secured before running the lathe.

## Rotating (Swiveling) the Headstock

To swivel the headstock:

1. Pull the locking knob out and twist into the “Unlock” position, ensuring the pin drops into the cavity in the knob to hold it in place.



**WARNING! PINCH HAZARD** – Remove hand from locking knob when swiveling the headstock.

2. Swivel the headstock to the desired position (-90°, -60°, -30°, 0°, 30°, 60°, 90°, 180°).
3. Pull the locking knob out and twist into the “Lock” position. Ensure the swivel lock pin drops fully into place.
4. If the headstock swivel doesn’t lock in place at first, swivel the headstock lightly back and forth near the desired position to allow the internal pin to lock into place.

## Spindle Index/Lock

The spindle index pin locks the headstock spindle. It is selectable in 15 degree increments (24 divisions). There is sight hole to read index numbers (0 through 23).

1. Stop the lathe.
2. Pull the Spindle Index Locking Knob and turn it until the pin drops into the hole. To lock the spindle it must engage into a slot in the spindle index plate.

<i>Divisions</i>	<i>Index Number</i>	<i>Degrees</i>
2	0,12	180
3	0,8,16 (every 8th)	120
4	0,6,12,18 (every 6th)	90
6	0,4,8,12,16,20 (every 4th)	60
8	0,3,6,9,12,15,18,21 (every 3rd)	45
12	0,2,4,6,8...22 (every 2nd)	30
24	every hole	15



**WARNING!** Make sure the index pin is disengaged before operating the lathe. The locking knob must be secured in the “Unlock” position to prevent it from engaging while the spindle is turning.

## Mounting a Faceplate or a Chuck

1. Use the Spindle Index Pin to lock the headstock spindle.

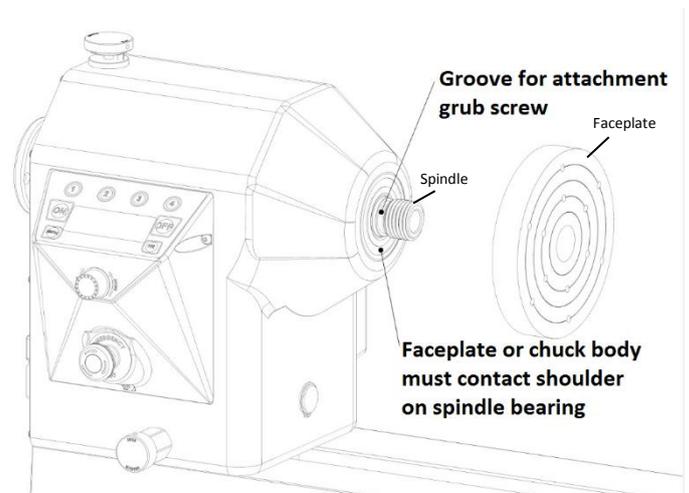
**i IMPORTANT NOTE:** The Index Pin is designed for indexing purposes only, not for leveraging against when removing faceplates, inserts and chucks. For this we recommend holding the spindle using the operating bar through the 2 LHB holes (Lathe Hand Brake).

2. Remove the side-locking screw, then wind the faceplate or chuck onto the spindle threads. A spindle washer in between may be used to make removal easier.



**WARNING!**

The faceplate or chuck body must contact the shoulder on the spindle bearing.



3. A groove is provided on the spindle for a special locking grub screw that is used in conjunction with Nova chucks and accessories to prevent unwinding during reverse operations. Insert the side-locking grub screw and tighten firmly in place, without over tightening.
4. Pull and turn the Spindle Index Locking Knob and place it in the "Unlock" position.

 **WARNING!**

It is important that all Chucks and Faceplates that are used on the DVR spindles have a side-locking function. Some older NOVA/Teknatool products may not have a side-locking function. If any of these products are intended to be used on the DVR spindle they will need to undergo a modification to include the side-locking function or new products purchased with a side-locking function. All spindle mounted products produced by Teknatool International for the DVR Lathe have side-locking functions\*. The side-locking function should be used at all times while running the chuck on the spindle during operation. Without this function engaged the Chuck or Faceplate may unwind from the spindle during operation.

 **WARNING!**

When installing or removing the Faceplate or Chuck from the spindle, the side-locking grub screw **MUST** be completely removed. This avoids any potential damage to the spindle that the grub screw may cause if is not completely removed when winding the Faceplate or Chuck on or off the spindle.

*\*Exception 1.* When an ILNS insert is used with a FP150Z faceplate on the DVR 2024 or a Spindle adaptor, the insert or adaptor must be locked onto the faceplate to avoid it unwinding when the spindle is run in reverse. Loctite 272 Threadlocker is recommended.

*\*Exception 2.* Customers with dedicated threaded Teknatool chucks who intend using the chuck on the NOVA GALAXI DVR 1644 Spindle must have a side-locking function adapted to the chuck before running it. Chucks with M33 threads may apply for Europe.

## Toolrest

To move the Toolslide along the bed, loosen the Toolslide Clamp Handle, move the slide to the desired position, and tighten the clamp handle.

To adjust the Toolrest, loosen the Toolrest Clamp Handle, position the Toolrest, and tighten the clamp handle.

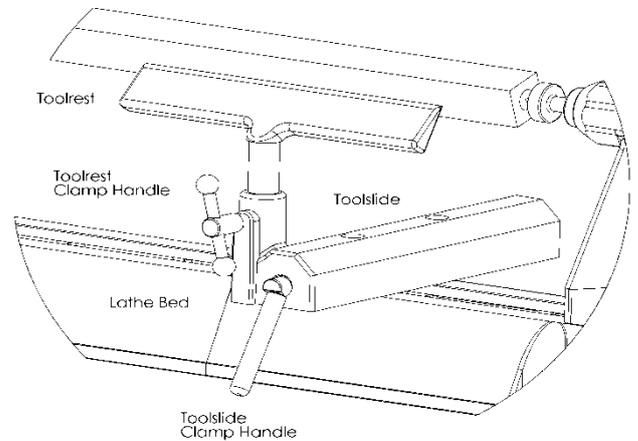
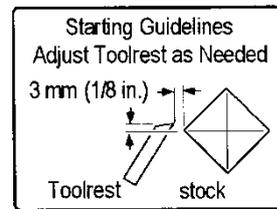
Adjust the Toolrest close to the work piece. Exact positioning may be varied to suit the turner. Revolve the stock by hand to make sure it clears the rest before starting the lathe.

At intervals, stop the lathe and readjust the Toolrest.



### WARNING!

Lathe tools and chisels should remain on the Toolrest whenever the tool is in contact with the work piece. Remove the Toolrest when sanding or polishing so fingers do not get pinched.



## Tailstock

To open the tailstock door, loosen the thumb screw until it is released from the threaded hole in the tailstock body.

To move the Tailstock along the bed, release the Cam Lock Lever, slide the Tailstock to the desired position, and tighten the Lever to lock into place.



### WARNING!

Never loosen the Tailstock Quill or Tailstock while the work piece is turning.

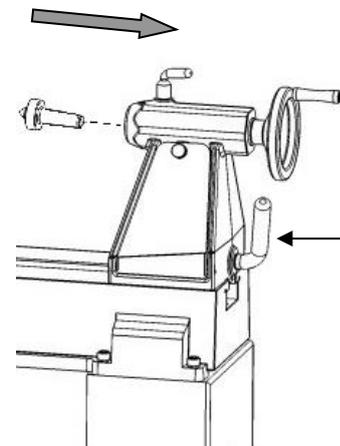
To move the Tailstock quill in or out, loosen the Quill Lock and turn the Handwheel. Lock the quill in place with the Quill Lock.

The Tailstock Quill accepts centers and accessories with no. 2 Morse taper (#2 MT). To install a taper use a quick, firm action by hand. Do not pound the taper into the hole.

To remove a taper, either wind the quill into the tailstock until the taper is ejected or insert the operating bar through the Tailstock Quill hole. While holding the taper so it doesn't fall, tap it out.

The Tailstock Quill is hollow, allowing you to bore holes through turnings if a hollow center is used.

Quill Eject Direction



Operate Cam Lock Lever to release and lock tailstock. Can be operated forward or backward.

## Using a Spur Center

Mount the spur center to the work piece as shown in Fig. 1, then insert the spur center and work piece into the headstock spindle.



### WARNING!

Do not pound work piece into headstock drive center when turning between centers or you may damage the headstock.

To remove the center, insert a 10mm (3/8-inch) diameter wooden dowel or steel rod through the headstock spindle hole. While holding the center so it doesn't fall, tap it out.

For Hardwoods - drill centers and saw diagonals for spur drive center.

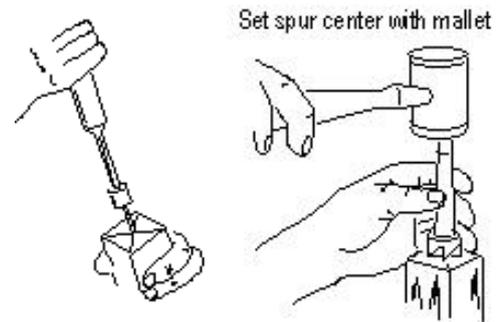
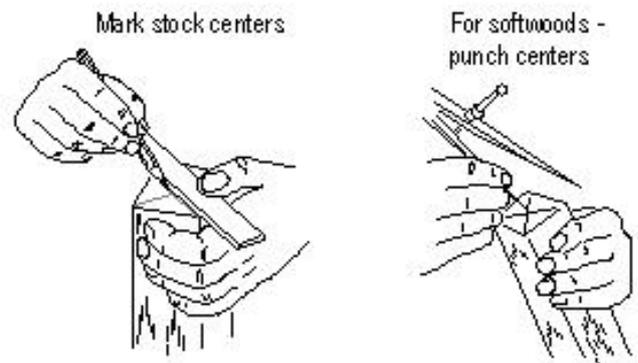


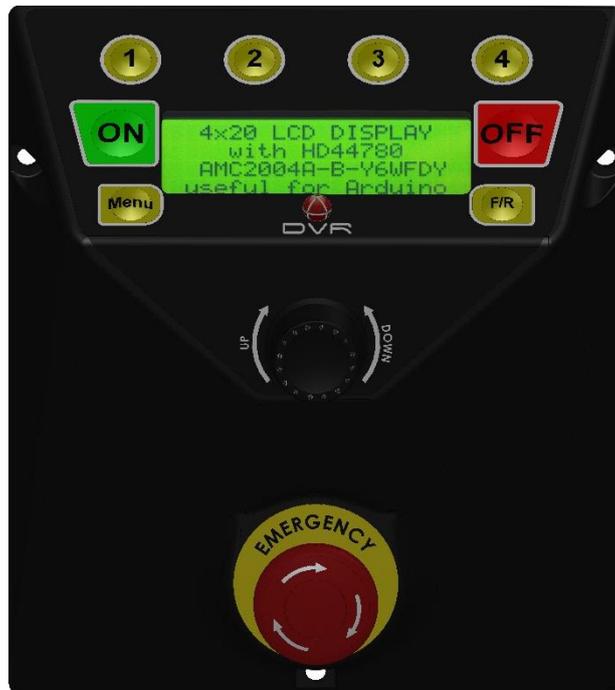
Figure 1



## DVR Drive Function Basics

**NOTE:** For more a more in-depth description on the DVR Drive setup, settings and features please refer to sections "DVR MOTOR AND CONTROLLER" and "HMI" in this manual.

Once the machine has been plugged in and the power has been turned on, the display will run through the start-up screens (screen will not display text shown in picture below).



The home screen will show as follows:



Default starting screen will show the default speed (Fav. Speed #2D)  
 The >> indicates that the forward direction of rotation  
 The motor status or certain warnings will be displayed at the bottom

1. **GREEN ON** – Press to start lathe at the current set speed – always check that the speed has been selected correctly. When the computer is first switched on it is set at a default speed of #2D (500 rpm by default). Remember that whenever the computer is switched off at the wall or at the incoming power supply switch the computer will restart at the default setting. The spindle cannot restart until “ON” button is depressed.

As with any wood lathe, ensure that the index is off and the work piece is free to turn without hitting the Toolrest etc. Ensure that the work piece is secure and the appropriate speed is selected.



When the ON button is pressed, the screen will display the set speed and direction for 2 seconds before switching to the running speed.

**Note:** It is normal for the running speed to vary at all speeds. However, the maintained speed will vary more at low speeds because the internal sensor is not able to collect as much data for precise speed control.

2. **RED OFF KEY.** Pressing this key will stop spindle rotation and reset the HMI (Human Machine Interface).

The ON / OFF keys in the above panel only switch the motor on and off. The selected speed will remain until adjusted or computer switched off.

3. **RPM KNOB.** Rotate the knob clockwise to increase speed and rotate the knob counter-clockwise to decrease speed. The speed can be adjusted with the lathe running or stopped.
4. **FWD / REV KEY.** Pressing this key will change the motor rotation from forward to reverse. Pressing again will select forward. You can verify the direction by the two arrows at the bottom left or right of the screen. **IMPORTANT: always verify the forward or reverse is selected correctly before switching spindle on.**

The Direction of rotation setting is only available when the motor has stopped

Whenever reverse is selected a “Warning Reverse Selected” will flash on screen for about 1-2 seconds before spindle starts.

5. **MENU KEY.** Pressing the Menu key will bring up the user interface menu where the user is able to view and modify most of the settings on the lathe. For more information on the menu system, see the “User Interface Menu” section
6. **F1 to F4 KEYS.** The F1 to F4 keys can be used to set the target speed to favorite speed #1 to #8 respectively.

Auto safety -- If the power is lost to the machine, when power is restored the computer will reboot but the machine will not start until the ‘ON’ switch is pressed. Remember to correctly select speed if different from Default speed.

 **WARNING!** Do not push several keys together as special coded combinations of keys open diagnostic and service functions. Some of these disable control and protection functions. If an unfamiliar screen is displayed, switch off the machine and leave depowered for one minute before rebooting.

If the DVR hasn’t been used for some period (over one month) it is helpful to switch the unit on 30 – 60 minutes before use.

## TURNING TIPS

The DVR Motor technology is not just a variable speed motor - its smart motor technology takes turning to a new level. The speed, vibration and load sensing work with the conditions and turning. The machine will reward skilled turning with exceptional finish conditions. There is often no need for sanding. As you apply load (chisel pressure or depth of cut), the control will sense the change in spindle conditions and compensate accordingly. Get a feel of the communication between yourself and the motor turning by applying increasing force. The motor will respond by applying increased power to exactly maintain speed.

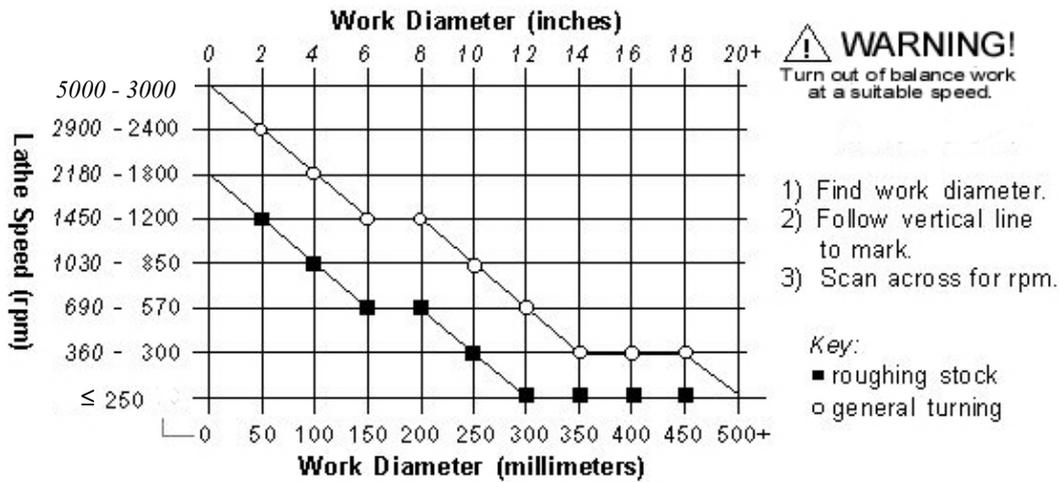
LOW SPEEDS 100-350: Select Hard Mode (see Special and Parameter settings)

Note – at low speeds 100- 350 rpm control of the chisel is important. At 250 rpm the motor still has good torque (in fact the torque is more or less the same as at 400 or 1000) – but at low speeds there is a difference. The DVR is a unique type of motor in that the control only supplies enough power to maintain the spindle at the commanded speed. It needs to sense the load from the chisel and then it will apply power as needed. At very low speeds the chisel can move fast compared with the rotation of the wood. The important thing is to have good control of the chisel and maintain steady cuts (using the same woodturning practices that produce quality cuts and finishes). In this way surprisingly heavy cuts can be achieved. However, rapid or reckless use of the chisel will be immediately sensed by machine and spindle will shut down and then automatically try a restart.

*“Will The Machine Shut Down on Interrupted Cuts?”*

Not as long as the cut is within the normal range of Woodturning cuts. An interrupted cut at slow rpm may cause a loss of control of the chisel and a dig in may occur. A way to understand chisel feed rates is to consider that at 100 rpm, the work piece has only rotated about 1 and a half turns in one second and 4 turns at 250 rpm. Considering that chisel feed or movement under normal turning can be anything between 5 and 100mm per second at normal Woodturning turning speeds. At very low rpms it is easy to move the chisel too fast for good cutting conditions. In general, low rpm is only used for special processes or conditions. Speeds below 350 are generally not Woodturning speeds. The machine will operate down to 100 rpm but this is generally for applying finishes and other applications.

## LATHE TURNING SPEEDS



Correct selection of turning speeds is important for safety and finish cut quality. It is important to take into account the fixing of the work piece; it should be made as secure as possible. Various techniques are available for this consult books on the subject and seek training opportunities. There are safety and out of balance considerations. Aim for a good balance in turning speed, ensure good fixing and try to balance timber as much as possible before installing on lathe.

In general wood likes being sliced and if too low a speed is used the timber can "hammer" against the cutting tool, tearing fibers and imposing large forces on the tool and work piece. This can often be dangerous, it is best to select a higher speed, the cut will be smoother and less force is imposed on the work piece. It can be likened to a wood plane; if it is pushed very slowly, much force is needed to break the fibers. If the plane is pushed at a higher speed, less force IS involved and a better cut results. Use 250 rpm when needed, but it is better turning at 400-600 rpm.

## Learning Turning

The art and technique of turning is a subject beyond the scope of this instruction manual. It is recommended that you receive hands-on instruction on lathe turning and/or refer to books and videos on the subject. For reference, some woodturning books are:

### ***The Lathe Book***

By Ernie Conover

### ***Woodturning a Foundation Course***

by Keith Rowley

### ***Creative Woodturning***

by Dale Nish

### ***The Fundamentals of Woodturning***

by Mike Darlow

### ***Turning Wood with Richard Raffan***

by Richard Raffan

# DVR MOTOR AND CONTROLLER

## Overview

The DVR integrated motor drive system contains four main parts, the DVR Motor (stator and rotor built into the headstock), the Rotor Position Sensor (RPS), the drive control board and the human-machine interface (HMI). The control board, RPS and HMI make up the electronic control system of the drive.

The DVR motor is controlled by the control board which handles all the timing and power management to ensure an energy efficient and powerful motor. The control board receives the commands from the user through the keypad and the HMI board, and it provides useful feedback information such as the running speed and temperature, which is displayed to the user via the LCD display.

## DVR Specifications and Features

- Type of motor: Switched Reluctance Motor
- Rated power output: 1250 W, 1.75 HP
- Speed range: 100 – 5000 rpm
- Rotation direction: Bidirectional (FWD & REV)
- Power supply range: 115 V – 240 V, 50 Hz – 60 Hz
- Power Factor:  $PF \geq 0.95$
- Speed controller: PI speed regulation with adaptive control coefficients
- Three pre-set PI coefficient curves: Soft, Normal and Hard
- Work piece inertia measurement for PI speed controller adaptive control
- Torque and speed ramp functions
- Overload protection
- Under voltage protection
- Control board over-heat protection

## HMI (HUMAN MACHINE INTERFACE) LAYOUT



## Keypad Description

The DVR motor system uses a keypad and a speed dial shown above for navigation and control of the lathe. The default key definition is listed below:

<b>Key</b>	<b>Description</b>
ON	Start key
OFF	Stop key
Menu	Menu / ( Menu Cancel )
F/R	Change Direction < Fwd / Rev > / ( Menu Confirm )
F1	Favorite Speed #1 or 5 / ( Menu Scroll Up )
F2	Favorite Speed #2D or 6 / ( Menu Scroll Down ) Note: #2D is the default start up speed
F3	Favorite Speed #3 or 7
F4	Favorite Speed #4 or 8

Alternatively, the F1 to F4 button can be redefined to adjust the current set speed. This can be achieved by going to the Menu > Favorite Speeds > F1-4 Function and set to Speed Up / Down.

In the F1 to F4 Function is set to Speed Up / Down Mode:

<b>Key</b>	<b>Description</b>
F1	Set Speed + 100 rpm
F2	Set Speed - 100 rpm
F3	Set Speed + 5 rpm
F4	Set Speed - 5 rpm

## Speed Dial Description

One of the major features which set the NOVA GALAXI DVR 1644 lathe apart from its predecessors is the inclusion of the speed dial. The speed dial allows the user to control the speed and navigate the menu system on the HMI.

<i>Speed Dial Action</i>	<i>Description</i>
Short Press	( Menu Confirm )
Turn Clockwise	Increase Speed - Fine Adjustment / ( Menu Scroll Down )
Turn Counter-Clockwise	Decrease Speed - Fine Adjustment / ( Menu Scroll Up )
Press and Hold & Turn Clockwise	Increase Speed - Coarse Adjustment
Press and Hold & Turn Counter-Clockwise	Decrease Speed - Coarse Adjustment

The speed dial has 2 modes. The fine speed adjustment mode which allows the user to accurately change the speed, and the coarse speed adjustment mode, which lets the user quickly change the speed. The increment / decrement of each click of the speed dial depend on the current set speed of the lathe. A small step adjustment at low speed will allow the user to accurately control the speed, while a larger step size at a higher speed will allow the user to adjust the speed quickly. The table below lists the step sizes for the fine and coarse speed adjustment for the speed ranges.

<i>Speed Range (rpm)</i>	<i>Fine Adjustment</i>	<i>Coarse Adjustment</i>
Less than 200	5 rpm	20 rpm
200 – 499	5 rpm	50 rpm
500 – 999	5 rpm	100 rpm
1000 – 2999	10 rpm	200 rpm
3000 and over	20 rpm	500 rpm

## Starting Operation

When the NOVA GALAXI DVR 1644 lathe has just been powered up, the product name and version number will be displayed on the LCD followed by a warning message for the user. The user is able to skip the warning message by pressing the **<OFF>** button.

The following warning message will be displayed to the user:

```
Refer to owners  
manual for safe  
operating procedure.  
Ensure proper speed
```

```
and direction are  
selected.  
Always use guards  
and eye protection.
```

Once the starting operation is complete, the lathe is ready to be used.

## Factory Reset

If the user is experiencing problems with the NOVA GALAXI DVR 1644 Lathe, then it is advised for the user to perform a factory reset. This will wipe clean all stored data and revert back to all original factory settings.

### To perform a factory reset:

1. Hold the **<F3>** key down and press the **<OFF>** key.
2. Turn off the power to the NOVA GALAXI DVR 1644 lathe. Wait for 5 minutes for the circuitry to completely discharge.
3. Turn the power on and the LCD should display "Warning – EEPROM Reset", after this message is displayed, turn off the power to the Lathe again and wait 5 mins.
4. Power up the NOVA GALAXI DVR 1644 lathe, and the default parameters will be restored to the firmware memory.

A factory reset can also be initiated through the menu in the Motor Parameters section.

## Running the Lathe

When the starting procedure is complete, the HMI will enter the idle mode. The LCD will display the information such as the set speed and direction depending on the current settings. The following page lists the different layouts.

When the HMI displays that the lathe is ready to run, press the **<ON>** key to start the motor.

The **<OFF>** key can be used to stop the motor and reset the HMI into the idle mode.

To change the direction of the rotation of the lathe spindle, press the **<F/R>** key. Please note that the motor can only change directions when the motor is not running.

## User Interface Menu

The HMI has been programmed with a user interface menu. The menu can be used to configure and view the parameters of the lathe. The user can access the HMI Menu by pressing the **<MENU>** key when the motor is idle or running.

### Navigating the Menu

- To cancel or exit the menu, the user can press the **<MENU>** key until the HMI returns to the main idle screen.
- To select an item in menu, press the **<F/R>** key.
- To move the cursor **UP** the operator must turn the **Speed Dial counter-clockwise** OR press the **<F1>** key.
- Similarly, to move the cursor **DOWN** the operator must turn the **Speed Dial clockwise** OR press the **<F2>** key.

### Menu List

1. Speed Chart
2. Input Set Speed
3. Favorite Speeds
4. Speed Profile
5. Lathe Settings
6. Wireless Remote
7. Motor Parameters
8. Password Lock
9. Firmware Upgrade
10. Version Info

**Speed Chart**

The NOVA GALAXI DVR 1644 lathe includes a built-in speed guide for wood turning on the lathe. The main benefit of the speed chart is the ability to input the work piece size and cut type, and the lathe will then set the speed to a recommended value. To use the speed chart:

1. Go to the **Menu > Speed Chart**.
2. Select the type of cut to perform (Rough cut or Finish / Shape cut).
3. Select the work piece diameter.
4. Confirm the new set speed.
5. The HMI will return to the default screen with the new speed selected.

**NOTE:** The speed chart is only used to give an approximate of the speed that should be used. The actual turning speed should be selected based on the experience of the operator and the shape of the work piece.

 **WARNING!** Please use a slower speed for unbalanced work!

**Input Set Speed**

The 'Input Set Speed' function allows the user to quickly set any speed within the speed range in 5rpm steps. This allows the lathe speed to be accurately controlled despite the fine adjustment step size is 20rpm for the speed dial.

To access the function, go to the menu and select the 'Input Set Speed' option. The user will be able to select the new speed using the <F1> to <F4> keys or Speed Dial.

Once the user has selected the speed, press the <F/R> key and then confirm the new speed.

```

+100  -100  +5  -5

Enter New Speed
250 rpm

```

**Favorite Speeds**

The favorite speed function has traditionally been a feature in the NOVA DVR lathes. The favorite speeds allow the user to quickly switch between a set of predefined or user defined speed. The favorite speeds can be accessed by pressing the <F1> to <F4> keys to select Fav. Speed #1 to #8. To access favorite speeds 5-8, quickly press the corresponding F buttons twice (double press F1 for Fav. speed 5, F2 for Fav. Speed 6, etc.). The machine will prompt the user to confirm the speed selection.

The predefined favorite speed values are listed below:

Key	Favorite Speed #	Speed (rpm)
<F1>	#1	250

<F2>	#2D (Default)	500
<F3>	#3	750
<F4>	#4	1020
<F1> x 2	#5	1250
<F2> x 2	#6	1500
<F3> x 2	#7	1750
<F4> x 2	#8	2000

### **Alternative Function**

The <F1> to <F4> keys can be used to modify the set speed when the motor is idle or running. To set the alternate function, go to **Menu > Favorite Speeds > F1-4 Function** and set to Speed Up / Down.

**NOTE:** The step size is constant and is good for accurate speed control at high speeds unlike the incremental step sizes of the speed dial.

<b>Key</b>	<b>Alternate Function</b>
<F1>	Set Speed + 100 rpm
<F2>	Set Speed - 100 rpm
<F3>	Set Speed + 5 rpm
<F4>	Set Speed - 5 rpm

### **Editing the Favorite Speed**

To modify the preset values follow the steps below:

1. the user can go to **Menu > Favorite Speeds > Edit Fav Spd #1-4**
2. Select the favorite speed to modify
3. Modify the speed using the <F1> to <F4> keys or Speed Dial
4. **Press <F/R>** to save the new speed
5. **Press <F/R>** again to confirm the value and save to memory.

**NOTE:** When confirming the new Favorite Speed value, the new speed is automatically saved to memory. This value will be stored permanently in the memory until a factory reset.

**NOTE:** When setting a new Favorite Speed #2D, this changes the default speed of the machine until a factory reset.

### **Speed Profile**

The DVR motor has built in speed control profiles, each with slightly different PI controller coefficients and performance characteristics:

- SOFT - For light work at speeds lower than 500 rpm

- NORMAL (default) - Suitable for most work and is the default setting
- HARD - For heavy and/or 'out-of-balance' work at speeds lower than 500 rpm

To switch between the 3 speed control profiles

1. Go to **Menu > Speed Profile**
2. Press **<F/R>** to toggle between the different speed profiles.

**NOTE:** Changing the profile will change the Kprop and Kint parameter based on the predefined curve and the running speed. If the user sets a new value for Kprop and Kint, this value will be constant until the lathe is powered off.

## **Lathe Settings**

### **Display Size**

There are two display size options that the user is able to select: Large and Normal. The user can toggle between the two modes at any time by going to **Menu > Lathe Settings > Display Size**, and press the **<F/R>** key to toggle between the two modes.

#### **1. Large Number Display (Default)**

The large number display was created to show the set speed using a larger portion of the screen, allowing the user to read the speed at a distance. When the motor is running and display is in the large number mode, the running speed will be displayed instead of the set speed on the LCD display.

#### **2. Normal Number Display**

The normal display mode displays more information, such as the function of the F1 to F4 keys in the top line. The

### **Assisted Braking**

A new feature which has been introduced to the NOVA DVR Lathe range is the powered assisted brake. The braking function provides some power to the motor after the **<OFF>** button has been pressed, this can be used to help stop the spindle and reduce the freewheeling time when working with large or heavy work-pieces.

To enable or disable the assisted brake, go to the **Menu > Assisted Braking** and press the **<F/R>** key.

The braking function will activate when the parameter is enabled and the **<OFF>** button has been pressed OR when the emergency stop button has been pressed. It is important that the user does not press any buttons or try to use the HMI when the motor has the braking engaged.



**WARNING!** ENSURE THAT THE CHUCK IS FULLY SECURED TO THE SPINDLE. The braking force may unwind a chuck which is not properly fastened.

### **E-Stop Braking**

To ensure a quick stop when pressing the emergency stop button, there is a more powerful assisted braking associated with the E-Stop function. This braking can be turned off and on desired.

### *Idle=Auto Off*

A new feature introduced in the Galaxi Lathe is the automatic shutdown of the lathe. When the feature is turned on, the idle motor sensor monitors the load of the motor and checks if the user is currently turning. This feature works with or without a workpiece attached to the spindle. If the operator is not turning the work piece or making any changes to the load on the motor for 4 minutes, a warning will be displayed on the HMI display. If the warning has not been cleared and the motor has been running idle for 5 minutes, the motor will automatically be shut down and a warning message will be displayed to the user.

When the warning message has been displayed to the user, the <F3> key can be pressed to turn off the idle motor sensing motor feature; otherwise any key can be pressed to clear the message and wake up the lathe.

### *Wireless Remote*

The wireless remote is an optional accessory for the NOVA GALAXI DVR 1644 Lathe. The wireless remote allows the lathe to change speed and turn the motor on and off without having to use the HMI. The advantage of the remote is that the user is able to start the lathe from the tail stock end of the machine.

**IMPORTANT:** The new remote module is not compatible with previous watch style DVR remote.

### **CONNECTING THE REMOTE**

Once the remote module has been plugged into the HMI board, the remote control can be paired by following the simple steps

1. Go to **Menu > Wireless Remote**
2. Select Pair new Remote
3. Press the <OFF> key on the remote control unit
4. Wait a few seconds for the remote and the HMI to pair, and for the remote ID to be stored, the new ID will be displayed

**NOTE:** The HMI can only be paired with 1 remote at a time. Successfully pairing a new remote will clear any existing remote ID.

### **CLEARING THE PAIR ID**

If the user would like to disable the remote, the remote ID can be cleared

1. Go to **Menu > Wireless Remote**
2. Select Unpair Remote
3. Select Yes to confirm the ID clear, the remote ID should now be cleared

### *Motor Parameters*

One of the advantages of the DVR motor is the sophisticated electronics and software which allows the control board to constantly monitor and optimize the power of the motor. The various parameters of the motor can be modified and saved into EEPROM memory.

**NOTE:** The parameters Kprop and Kint cannot be saved into the EEPROM memory because it is based on the speed profile parameter.

The Factory Reset can be initiated at the bottom of this menu. See Factory Reset section for complete instructions and more information.

<i>Parameter</i>	<i>Description</i>	<i>Default Value</i>
Profile	Motor speed control profile	Normal
Kprop / Kint	PI speed controller coefficients	Varies
V kprop / V kint	PI voltage controller coefficients	2000 / 9000
Vd DC Bus	Motor phase DC bus voltage	360v

T Heatsink	Temperature of the controller heatsink	-
T Threshold	Temperature threshold for current reduction	60°C
Spd Err	Difference between SET and RUN speed	-

 **WARNING!** Extreme changes to these parameters can result in undesirable and potentially unsafe motor behavior. Call the NOVA Customer Care Center if you have any questions on what effects your changes will make.

**Password Lock**

The Galaxi lathe can be password locked to prevent unauthorized use.

**Note:** Setting the password to “0000” will turn the password off.

If the password is forgotten, performing a factory reset will clear the password.

**Firmware Upgrade**

The HMI plays an important role in the control and functionality of the NOVA Voyager DVR Drill Press, and the HMI firmware version controls the features and performance of the drill press. The firmware version of the HMI can be upgraded via USB cable accessory and a PC with internet access. Be sure to check [www.teknatool.com](http://www.teknatool.com) periodically for firmware upgrades for your machine, which may allow new features or software improvements that could enhance the performance of the drill press. Email [service@Teknatool.com](mailto:service@Teknatool.com) for firmware update software and procedure.

**Version Info**

The current version of the HMI and the main control board can be displayed on the LCD screen.

```
NOVA GALAXI DVR 1644
TEKNATOOL Int. 2015
Version 8.22c R2G01c
```

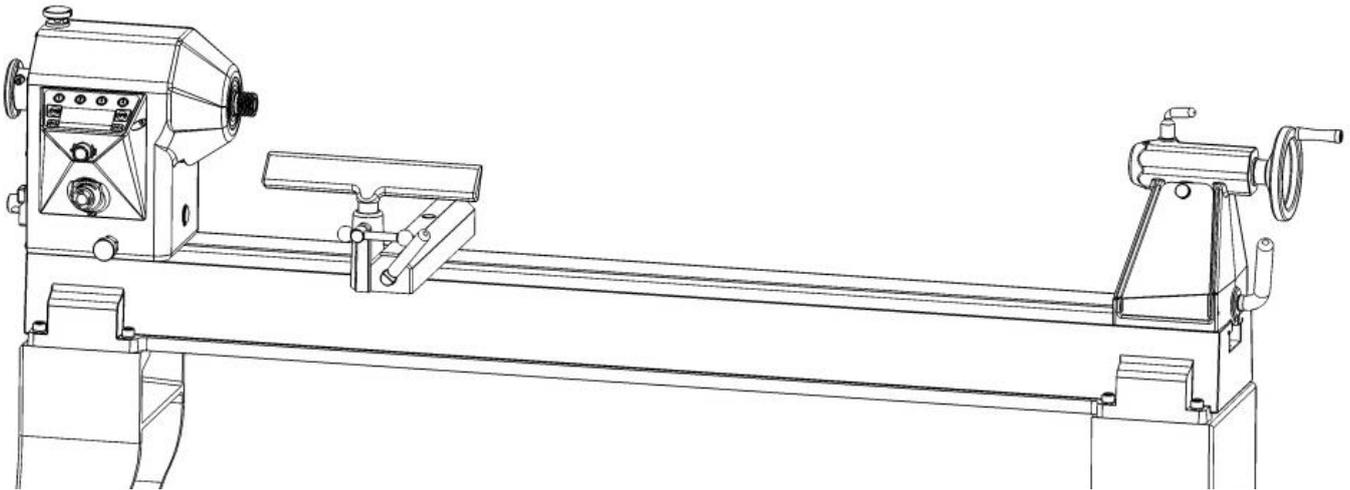
**MAINTAINING THE GALAXI DVR 1644 LATHE**

**General Maintenance**



**WARNING!** Always isolate from power supply (unplug) before carrying out any maintenance.

<b>Interval</b>	<b>Maintenance</b>
After each use	Clean the work area and Lathe. Vacuum shavings and dust from the Headstock, Tailstock, under the Toolslide and in between the bed.  Wax exposed cast iron parts with a good quality paste wax, especially the bed rails. Buff out the wax thoroughly.
Monthly	Check tightness of nuts and bolts.  Lubricate, with one or two drops of light-weight oil, the tailstock quill threads, index pin shaft, and the Toolslide camshaft (remove plastic plugs) and Toolslide front camshaft bore.
6 Months	Lubricate the tailstock slot with one or two drops of lightweight oil.



## Cleaning the Toolslide

If the toolslide becomes hard to move and adjust, cleaning and lubricating are required.

1. To make the toolslide slide more freely along the bed, make sure the bed rails are clean. Apply some paste wax to the rails.
2. If the toolslide is hard to move towards or away from you, remove the toolslide from the lathe bed. Clean the toolslide camshaft (round eccentric rod) with a petroleum-based solvent. Lubricate the rod with lightweight oil or a silicone spray.
3. Slide the base back onto the lathe bed.

## Cleaning the Tailstock

If the tailstock quill becomes hard to use or the Handwheel is hard to turn, cleaning and lubricating are required.

1. Remove the 6mm set screw from the tailstock. If necessary, turn the Handwheel to expose the set screw.
2. Using a screwdriver, remove the keeper plate from the tailstock body.
3. Remove the quill and Handwheel from the tailstock body.
4. Wipe cleans all parts including the inside of the tailstock.
5. Lubricate the quill and tailstock slot with lightweight oil and apply a small amount of grease to the quill threads.
6. Reassemble.

# NOVA DVR WIRELESS REMOTE II INSTALLATION INSTRUCTIONS - OPTIONAL ACCESSORY (NOT STANDARD EQUIPMENT)

SKU  
Publication No. 119-0716-002

## ADDITIONAL SAFETY RULES:



**Warning!** Failure to follow these rules may result in serious personal injury. **IMPORTANT: THIS REMOTE IS NOT INTENDED FOR USE AS AN EMERGENCY DEVICE AND SHOULD NOT BE RELIED UPON**

1. **DO NOT RELY ON THIS DEVICE AS AN EMERGENCY STOP DEVICE.**
2. **DO NOT OPERATE THE WIRELESS. REMOTE UNTIL IT IS COMPLETELY ASSEMBLED AND INSTALLED.** Follow instructions and recommendations.
3. **REMOTE MUST BE SECURELY FASTENED.** Fasten to either wrist or to the wood lathe with the magnetic back.
4. **DO NOT GET WET.** The remote may be destroyed or become inoperative if it gets wet.
5. **AVOID EXCESS SAWDUST.** Limit sawdust contact with the remote.
6. **FOLLOW ELECTRICAL CODES.** Make sure wiring codes and recommended electrical connections are followed and that the machine is properly grounded.
7. **KEEP WORK AREA CLEAN.** Do not turn the wood lathe on before clearing it of all objects (tools, scraps of wood, etc.). Keep the nearby area and floor clear of debris.
8. **CHECK SET-UP WITH SPINDLE OFF.** Examine the set-up carefully and rotate the work piece, by hand, to check clearance. In addition, check to see speed is correctly selected before turning on spindle.
9. **ALWAYS CHECK CORRECT SPEED IS SELECTED BEFORE SWITCHING ON THE SPINDLE.**
10. **USE LOWEST SPEED** when turning a new or unbalanced work piece.
11. **TURN AT RECOMMENDED SPEED.** Always operate the wood lathe at the recommended speeds. Consult your wood lathe manual for suggested speeds.
12. **WHEN ROUGHING STOCK,** do not jam the wood lathe tool or chisel into work piece or take too big/deep a cut.
13. **DO NOT OPERATE LATHE IF DAMAGED OR FAULTY.** If any part of your wood lathe is missing, damaged or broken, in any way, or if any electrical component fails, shut off the wood lathe and disconnect the wood lathe from the power supply. Replace missing, damaged, or failed parts before resuming the operation.
14. **ADDITIONAL SAFETY INFORMATION.** The instruction for the safe and proper operation of this product is available from the National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611 in the Accident Prevention Manual of Industrial Operations and also in the Safety Data Sheets provided by the NSC. Also refer to the American National Standards Institute ANSI 01.1 Safety Requirements for Woodworking Machines and the U.S Department of Labor OSHA 1910.213 Regulation.

## Installation Instructions:

1. Unpack the two parts from packaging. The small circuit board is the 'Receiver Module' which goes in the control panel of the wood lathe. The larger device is the 'Remote'.

**Receiver Module (C):**



**Remote:**

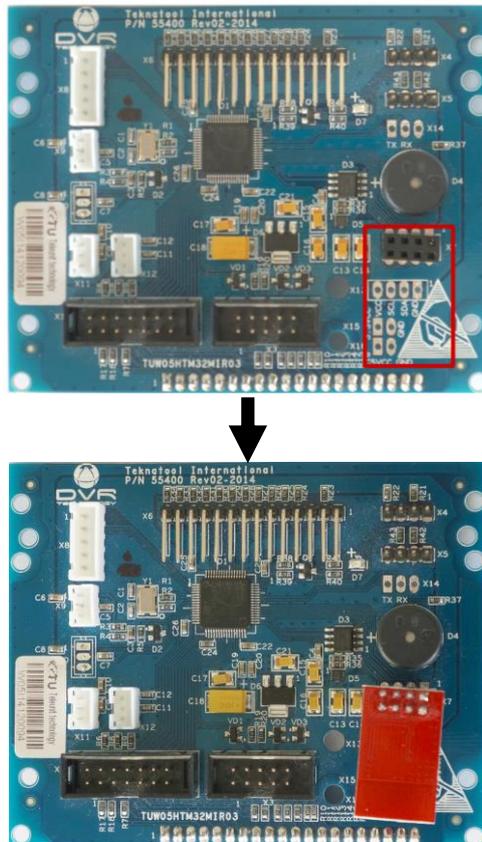


2. Turn off the wood lathe and unplug its power cord. Wait 2 minutes for the control circuitry to power down.
3. Remove the Control Panel from the headstock by loosening or removing the 3 screws on the front of the Control Panel. Gently remove the Control Panel from the head stock.



## Inside the Control Panel:

4. Plug the Receiver to the user interface board in the position shown below.



5. Put Control panel back to the on the Headstock and screw in its three mounting screws. Check that the control panel is secure and tighten mounting screws as necessary.
6. Power on your DVR and select the Wireless Remote in the Menu.



7. Select "Pair ID" on the screen to begin pairing procedures.
8. Press the <OFF> key on the remote to pair to the lathe, your DVR lathe and remote should now be paired.

Note: If the remote still does not pair, please contact your local Teknatool Agent.

## Remote Button Layout:



## Operating instructions:

### **Starting and stopping:**

To start the lathe with the remote, press and hold the Start/Stop button for 2 seconds.

To stop the lathe, just press and release the Start/Stop button once.



### **Changing the speed:**

To change the operating speed of the wood lathe with the remote, simply press or hold the 'Speed Up' or 'Speed Down' button.

NOTE: When changing the speed, the lathe can be running or stopped.



# TROUBLESHOOTING GUIDE

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<b><i>Problem</i></b>	<b><i>Possible Cause and Solution</i></b>
<i>Excessive vibration.</i>	<p>Out-of-balance or large work piece. Reduce lathe speed to the lowest speed possible and turn the work piece to a true circle. If you try adjusting the speed up or down, you will find that it is easy to find speed points that will minimize vibration, and that is one of the biggest advantages of DVR technology.</p> <p>Work piece is not held in the center. Check work piece mounting and correct.</p> <p>Work piece is not secure or held tightly enough. Check work piece mounting.</p> <p>Lathe incorrectly bolted to stand or bench. Refer to this manual for lathe stand recommendations.</p> <p>Non-stock stand or bench is not well constructed, too light, or not level on the floor. Make sure stand is solidly constructed. Use sandbags to weigh down the stand.</p>
<i>Faceplate or chuck running out of true.</i>	<p>Dirt build-up on the rear of the faceplates or chuck. Clean off all build-up and dirt. Faceplates and chucks must mount securely against the inner bearing ring surface of the spindle.</p>
<i>Turning tools not sliding smoothly across Toolrest.</i>	<p>Damaged surface on Toolrest face caused by sharp edged tools. File the Toolrest using a fine smooth file and polish with extra fine sandpaper. Also remove the sharp edges from the corners of turning tools.</p>
<i>Spur drive center or live center not holding into the spindle taper or quill taper when turning.</i>	<p>Small end of Morse taper is damaged due to dropping or hitting. File or polish away any damage. Check that inside of tapers have not been scored.</p> <p>Grease or oil inside of Morse tapers. Wipe clean the inside of the tapers.</p> <p>Insufficient pressure when installing the center. Use a quick, firm action by hand to install a taper. Do not knock in using any solid object.</p>

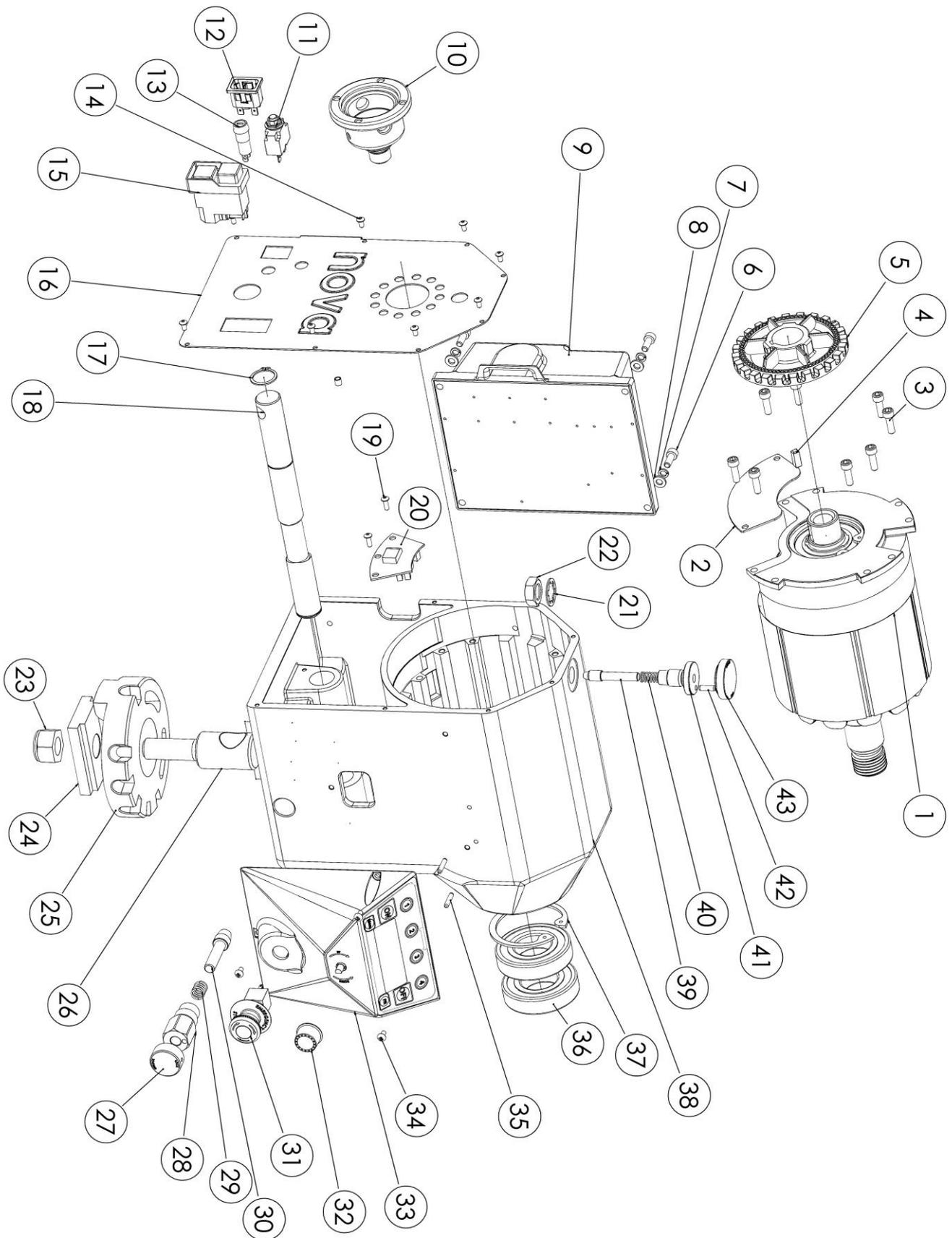
## TROUBLESHOOTING GUIDE *continued*

<b>Problem</b>	<b>Possible Cause and Solution</b>
<i>Display screen not on</i>	<p>Is master switch on? Toggle master switch to "ON" position.</p> <p>Check machine is plugged into wall socket and switched on.</p> <p>Check that the wall switch plug is live by plugging in another power tool. If the other power tool doesn't operate, check your board fuse.</p> <p>Check the master fuse on the lower rear guard. Ensure machine unplugged (see Additional safety rules at the front of this manual). If blown, replace with the spare fuse that comes with the lathe. Do not replace with a higher amp fuse.</p>
<i>Display screen shows</i>	<p>Press "OFF" button. Switch off computer by master switch, wait one minute, and switch on again. Check that the spindle index is not engaged or if something is preventing the spindle from turning. Note leaving the spindle index unit in will not harm the motor; however, it will put some strain on the index unit. It is likely that the spindle index will be left in from time to time, but the motor is designed for this.</p>
<b>Rotor Fault &lt;Flashing&gt;</b>	
<b>RP State Error</b>	<p>The optical sensors that give the spindle position feedback ('Rotor Position' State) are obscured, damaged or have been disconnected. Dust over a long period of time may have settled on the sensors. First, spin the spindle by hand to create a draught through the sensors. Re-try the motor. If the error remains, with the power switched off and disconnected, remove the upper-rear guard and remove any wood dust with a vacuum cleaner. Avoid getting the nozzle too close to the electronics. After this step, dust may fall into the Headstock, so suck the dust out through the vent at the front of the Headstock under the spindle. Do this sequence a few times. Try blowing with Vacuum or Air gun if available. Replace guard.</p>
<i>Display screen shows</i>	<p>The computer has built in voltage condition and temperature sensors. If this message appears, check the temperature of the lower section of the headstock. If it is very hot, switch off the master switch and leave the machine to cool down for a period. If the headstock is relatively cool, the computer may have detected an under and over voltage from the mains power. Switch off and try rebooting. The DVR has a high level of protection and is intelligently checking conditions all the time.</p>
<b>PFC Corrector &lt;Flashing&gt;</b>	

## TROUBLESHOOTING GUIDE *continued*

<b>Problem</b>	<b>Possible Cause and Solution</b>
<i>Tailstock and Headstock center not lining up correctly.</i>	<p>Bed incorrectly bolted to stand causing twist. Ensure stand and lathe bed are correctly installed.</p> <p>Headstock not returned to detent position after it has been rotated. Ensure that the headstock is locked into detent position.</p>
<i>Tailstock Handwheel hard to turn or will not turn.</i>	<p>Quill lock is locked; unlock the quill lock. If necessary, lightly tap a block of wood against the Handwheel handle. Tap the handle in a clockwise direction as viewed from the tailstock end.</p> <p>Build-up of dust and wood resin on the quill or inside of the Handwheel thread. Remove, clean, and lubricate the quill and tailstock as described under "Cleaning the Tailstock".</p> <p>The Quill has been extended too far and is locked against the Handwheel. Push the quill back into the tailstock when turning the Handwheel.</p>
<i>Tailstock quill hard to move.</i>	<p>The quill is damaged; turn the handle to expose the quill and check for marks along the quill, especially on the edges of the slotted keyway. Remove the high spots with a smooth file and test the quill travel. Replace the quill if necessary.</p>
<i>Tailstock/Toolrest/Headstock not locking correctly onto bed, or tailstock not sliding smoothly on bed ways.</i>	<p>For headstock/tailstock, check to make sure locking shaft/handle are fully tightened. If locking shaft/handle does not lock tightly or headstock and/or tailstock are still mobile, loosen applicable locking handles and tighten locking nut underneath bed. Repeat test and correction steps as necessary. <b>NOTE:</b> Do not overtighten nut or headstock and tailstock will be immobile.</p> <p>For toolrest, check to make sure locking handle is fully tightened. If locking handle does not lock tightly or toolrest is still mobile, loosen locking handle and tighten locking bolt underneath bed. <b>NOTE:</b> Do not overtighten bolt or toolrest will be immobile.</p> <p>Dirty bed ways and underside of headstock / tailstock / toolrest body. Clean bed ways and underside of body with a petroleum-based solvent.</p>
<i>Tailstock binds.</i>	<p>The inside of the bed has a high spot. File the area with a smooth flat file until the tailstock moves freely.</p> <p>The tailstock adjustment plate has a rough spot or a burr. Remove the tailstock and file the plate with a smooth flat file.</p>
<i>Tailstock jumps at bed section joints.</i>	<p>The machined flat surfaces are not flush. File the area with a smooth flat file until the tailstock moves freely.</p>
<i>Remote Battery Replacement.</i>	<p>If the battery fails, you can unscrew the 2 screws on the bottom of the remote and replaced with a <b>CR1632</b> battery. <b>NOTE:</b> The remote will still be paired with or communicate with your NOVA DVR Lathe after battery replacement.</p>

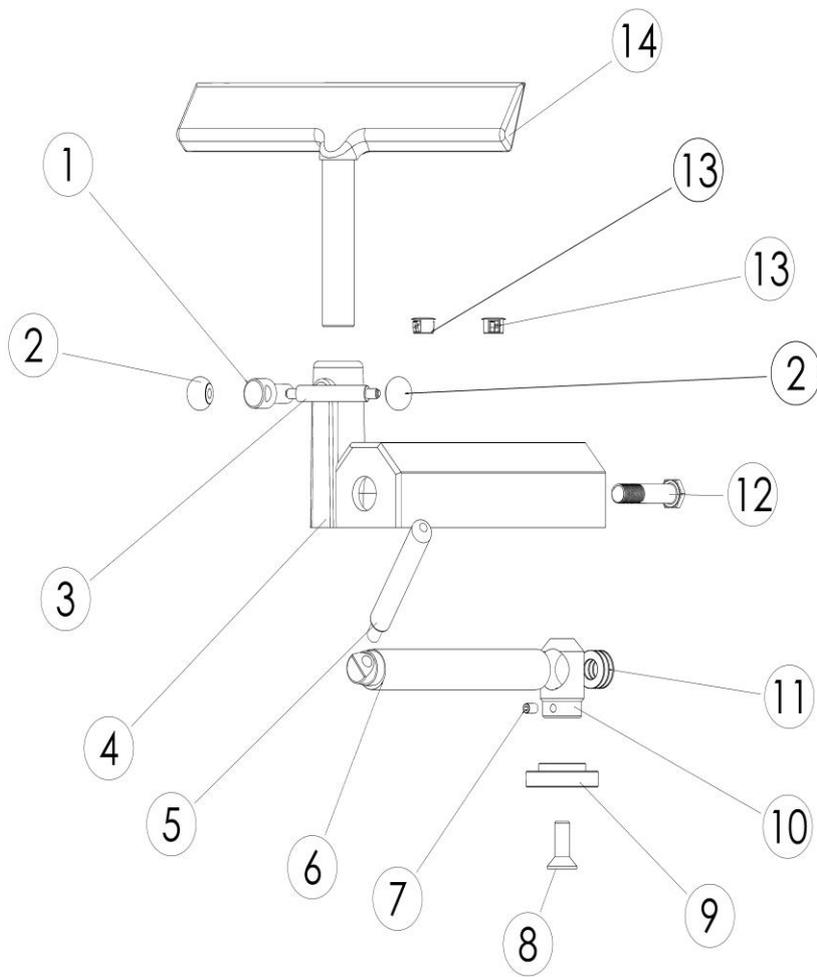
# HEADSTOCK EXPLODED PARTS IMAGE



## HEADSTOCK PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	5668000	DVR 1.75 HP Motor	1
2	55174	Rotor Housing Plate	1
3	5668001	Socket Head Cap Screw M6 x 20	8
4	55051	Spindle Fan Key	1
5	55011	Spindle Fan	1
6	5668002	Socket Head Cap Screw M6 x 16	4
7	5668057	Spring washer	4
8	5668003	M6 Flat Washer	4
9	5668004	Controller Assembly	1
10	5668005	Lathe Hand Brake	1
11	5668006	Thermal Breaker	1
12	5668007	IEC Connector Power Socket	1
13	5668008	Fuse Panel Mount C2	1
14	5668009	Button Head Socket Screw M4 x 8	8
15	5668010	Power Relay Switch	1
16	5660012	Head Back Cover Panel	1
17	EC22	External Circlip 22mm.	2
18	5660020	Head Lock Cam	1
19	5668012	Button Head Socket Screw M4 x 12	2
20	55020	Sensor	1
21	5668013	M16 Lock Washer	1
22	5668014	M16 Nut	1
23	NN18	M18 Nylock Nut	1
24	5668016	Head Lock Plate	1
25	5668017	Pivot Location Plate	1
26	5660018	Head Lock Bolt	1
27	5660016	Swivel Lock Knob	1
28	5660014	Swivel Lock Barrel	1
29	5668018	10mm ID Coil spring	1
30	5660015	Swivel Lock Pin	1
31	5668019	E-Stop Button Assembly	1
32	5668020	Rotary Knob	1
33	5660000	HMI Panel	1
34	MPB0408	Pozi Head Button Screw	3
35	23043	Dowel Pin Ø4 x 20	4
36	62072RS1-C3	Head Spindle Bearings	3
37	IC72	Internal Circlip 72mm	3
38	5668022	Headstock Casting	1
39	55033	Spindle Index Lock Pin	1
40	5668023	8mm ID Spindle Lock Spring	1
41	5668024	Spindle Lock Housing	1
42	TP131658	3/16" Tension Pin	1
43	55036	Spindle Index Lock Knob	1

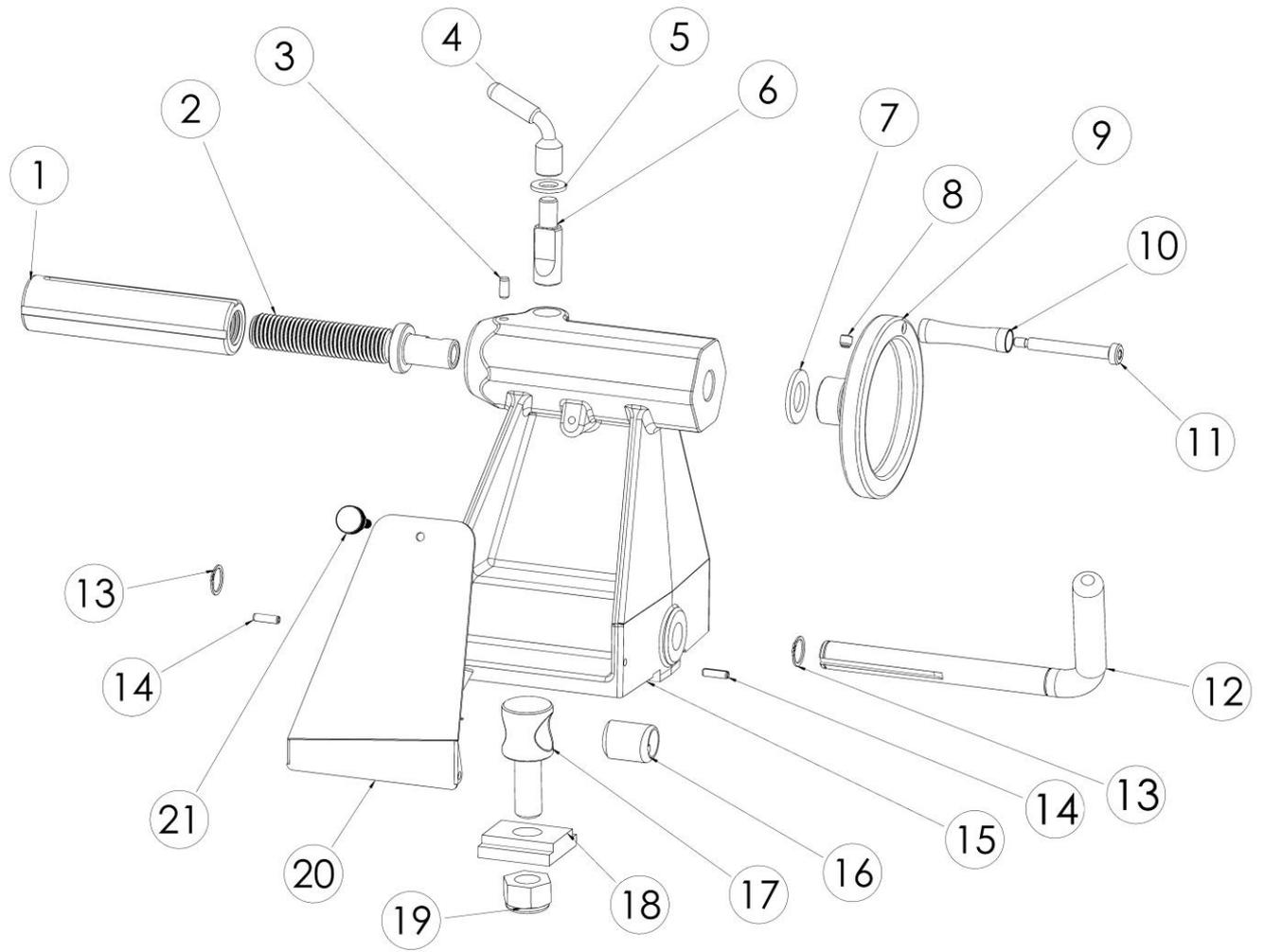
# TOOLSLIDE EXPLODED PARTS IMAGE



## TOOLSLIDE PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	5668026	Tool Rest Lock Boss	1
2	865913	Handle End Ball	2
3	25001	Tool Rest Lock handle	1
4	5668027	Toolslide Casting	1
5	5668028	Toolslide Lock Handle	1
6	5668029	Toolslide Lock Camshaft	1
7	G0610	Grub Screw	1
8	24011	Countersunk Head Cap Screw M12 x 30	1
9	5660019	Toolside Lock Plate	1
10	5668030	Toolside Lock Boss	1
11	FW10	Flat Washer	3
12	5668025	Hex Head Cap Screw	1
13	HP-16	Plastic Cap	2
14	5668031	Tool Rest	1

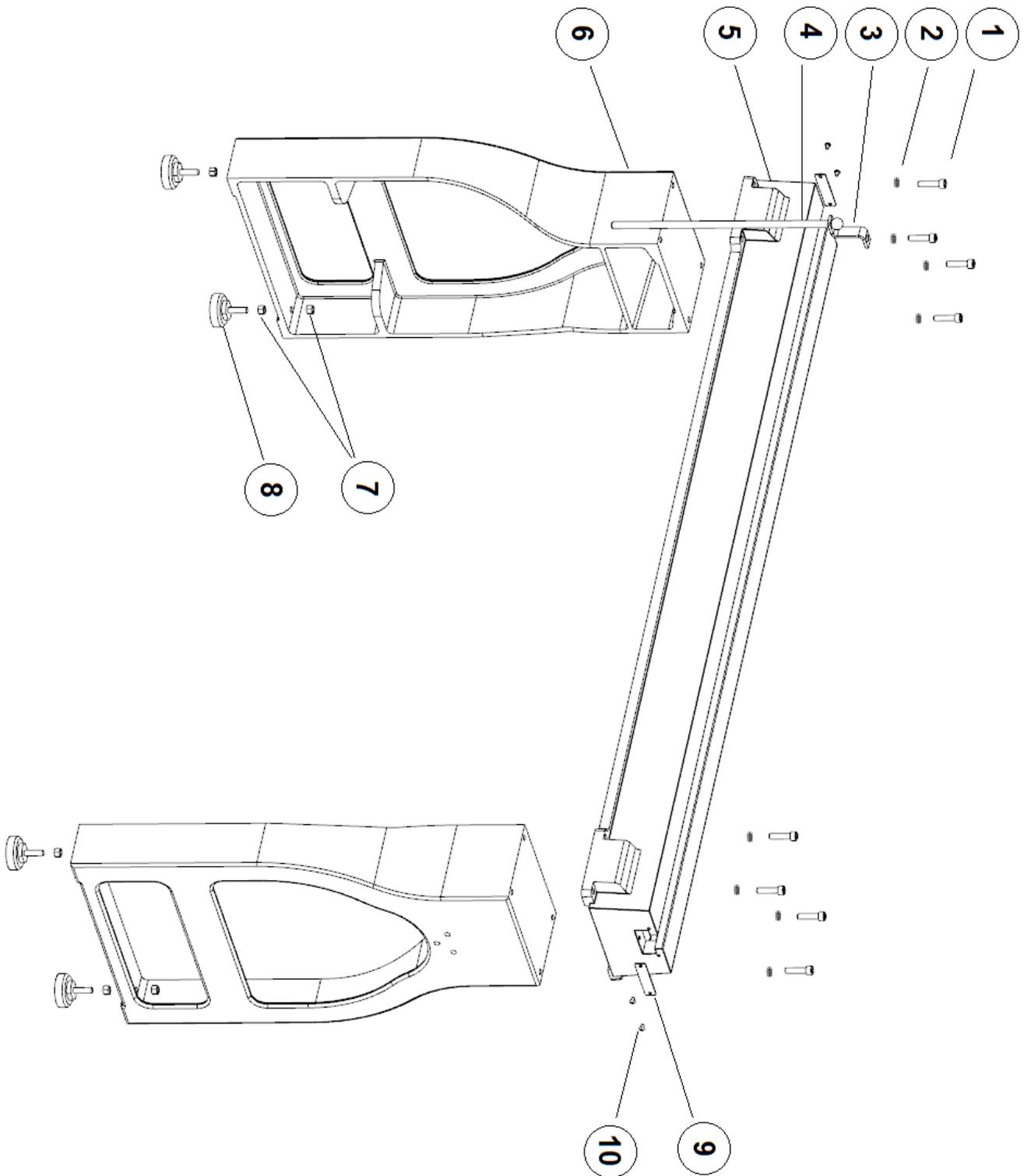
# TAILSTOCK EXPLODED PARTS IMAGE



## TAILSTOCK PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	Default/ QTY.
1	5668032	Tailstock Quill	1
2	5668033	Tailstock Quill Lead Screw	1
3	5668034	Dowel Pin 6mm	1
4	55029	Tailstock Quill Lock Handle	1
5	5668035	Flat Washer M12	1
6	5668036	Tailstock Quill Lock Pin	1
7	5668037	Flat Washer M20	1
8	5668038	Grub Screw Knurled Cup M8 x 8	2
9	5668039	Tailstock Handwheel	1
10	5668040	Tailstock Handwheel Handle	1
11	5668041	Tailstock Handwheel Handle Screw	1
12	5668042	Tailstock Position Lock Handle	1
13	EC18	External Circlip 18mm	2
14	TP0518	Tension Pin 5mm	2
15	5668043	Tailstock Casting	1
16	5668044	Tailstock Lock Cam	1
17	5668045	Tailstock Lock Pin	1
18	5668046	Tailstock Lock Plate	1
19	NN20	Nylock Nut M20	1
20	5668048	Tailstock Door	1
21	5668049	Door Knob	1

# BED AND LEGS EXPLODED PARTS IMAGE



## BED AND LEGS PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	5668050	Socket Head Cap Screws M10 x 40	8
2	SW10	Spring Washer	8
3	5668051	Knockout Bar Holder	1
4	5668052	Knockout Bar	1
5	5668053	Bed	1
6	5668054	Cast Legs	2
7	5668055	3/8"x16 Hex Nut	8
8	5668056	Foot	4
9	5668058	Stop Plate	2
10	5668059	MSPP-M5	4

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## TEKNATOOL WARRANTY

### ***Teknatool Five Year Limited Warranty ( 2 year on electrical parts)***

This Teknatool product is backed by a warranty from the date of purchase. Teknatool International Ltd will repair or replace, at its expense and option, this Teknatool product which in normal use has proven to be defective in workmanship or material, provided that the customer returns the product prepaid to an authorized Teknatool service center with proof of purchase of the product within TWO YEARS and provides Teknatool with reasonable opportunity to verify the alleged defect by inspection. Teknatool will pay return product by most cost effective surface transport to customer. Any special freight services above this will be at customer cost. Furthermore, Teknatool International Ltd. extends this two-year period for three additional years, excluding labor costs and electrical parts, provided the aforementioned conditions are met. All electrical parts and electronics are covered by a TWO YEAR warranty from the date of purchase.

Teknatool will not be responsible for any asserted defect, which has resulted from normal wear, misuse, abuse, power surges or excess voltage fluctuation, repair or alteration made by anyone other than an authorized service facility or representative. Under no circumstances will Teknatool International Ltd. be liable for incidental, special, indirect, and consequential damages or expenses, including loss of profits or loss of operations. This warranty is Teknatool International Ltd sole warranty. There are no other warranties, whether written or verbal, whether expressed or implied by law, trade, custom, or otherwise, whether of merchantability, fitness for purpose, or otherwise, except for remedies available to customers under the Consumer Guarantees Act or other legislation.

OVERSEAS CUSTOMERS: Our Teknatool Distributors and agents will issue their own warranty to cover this product. Terms may vary from those stated above; please check with your dealer. In North America warranty covers Continental USA only. For Alaska, Hawaii and other areas, warranty covers replacement of parts only and excludes transport costs.

*Register your warranty faster with Teknatool online.*

*Visit our website on [www.teknatool.com](http://www.teknatool.com) to register your warranty today!*



NOVA GALAXI DVR 1644 Lathe Manual  
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