



Operation manual



WIVAMAC® Lathes

**DB1000 2.1
DB1000 2.2**

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1 GENERAL

1.1 Introduction

The lathe has been designed and built in accordance with European guidelines and according to the European safety and construction standards

The manual contains all information in order to execute a proper set-up of the lathe. The instructions for using and maintaining the lathe safely are also included.

THE PERSONNEL THAT HAVE TO INSTALL, USE THE LATHE, CHECK OR MAINTAIN THE LATHE, MUST HAVE READ THIS MANUAL BEFOREHAND.

It is recommended to look after this manual carefully. However it should be within the reach of whoever needs to consult it at all times. The manual forms an integral part of the machine.

The lathe or machine may only be used for the purpose for which it was designed.

THE MANUFACTURER DECLINES ALL RESPONSIBILITY IF THIS MANUAL HAS NOT BEEN READ OR THE INSTRUCTIONS THEREIN HAVE NOT BEEN APPLIED.

1.2 Liability - Warranty

The WIVAMAC® lathes are guaranteed for a period of 5 years on the mechanical parts and 3 years on the electrical equipment.

The warranty only covers material or workmanship. Parts subject to wear, such as: drive belt, bearings, motor, etc, are not covered by this warranty.

No warranty claims can be made for damage caused by improper treatment or use and non-compliance with these instructions. Damage caused by failure of the electrical installation, overvoltage or current surges on the electrical grid and the non-observance of the electrical requirements is not covered by this warranty.

The manufacturer assumes no responsibility for any damage incurred through improper use or not following the instructions.

The warranty is voided upon changes to the machine or parts thereof, inadequate maintenance, parts replacement by non-original parts.

1.3 Before putting into use

Prior to the machine being delivered, it is subjected to a thorough test. This test is monitored by our production manager.

Prior to taking on the machine, the customer may optionally request a verification of correct installation at its own charge.

He may also call upon us for information and training related to the use and maintenance of the machine.

1.4 Explanation of symbols used in this manual



TIP: SUGGESTION OR RECOMMENDATION TO PERFORM TASKS



TAKE NOTE: COMMENTS WITH REFERENCE TO POTENTIAL PROBLEMS



CAUTION: INDICATES DAMAGE TO THE PRODUCT IF NOT WORKED CAREFULLY



WARNING: INDICATES DAMAGE TO THE USER OR THE PRODUCT IF THE PROCEDURES ARE NOT CAREFULLY FOLLOWED



MORTAL DANGER: CAN IMMEDIATELY THREATEN THE LIFE OF THE USER

1.5 Pictograms

1.5.1 Command signs



read the safety instructions



use of safety goggles



use of respiratory protection



the wearing of safety footwear

1.5.2 Danger signs



dangerous electrical voltage
Operation manual

2 DECLARATION OF CONFORMITY

(in accordance with directive 2006/42/EC) (Annex II-1.a)

THE MANUFACTURER: Willy Vanhoutte BV
Industriepark Noord 12
B-8730 Beernem
Belgium

Declares that the machine as described here below:

Lathe

Number:

Model: DB1000 2.1 - DB1000 2.2

Power: 750W/1HP 1.500W/2HP

Comments/options:

Year of manufacture:

HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING EUROPEAN GUIDELINES:

2006/42/EG – Machine safety
2006/95/EC – Low voltage directive
2004/108/EG – EMC Directive

HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING HARMONISED STANDARDS:

EN 12100
EN 60.204 –1

HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE FOLLOWING NATIONAL STANDARDS AND TECHNICAL REGULATIONS:

DRAWN UP IN: BEERNEM

ON: / /

BY: FILIP WAUTERS

FUNCTION: MANAGING DIRECTOR

3 TRANSPORT, STORAGE, MOUNTING AND DISMANTLING OR MOVEMENT OF THE LATHE

3.1 Conditions

During the transport and storage of the machine, it should be protected against all weather conditions (such as rain, bright sunlight, humidity).

The temperatures should remain between $-15\text{ }^{\circ}\text{C}$ and $+50\text{ }^{\circ}\text{C}$ and may reach a maximum of $+70\text{ }^{\circ}\text{C}$ for short periods of no more than 24 hours.

Appropriate provisions should be made to prevent damage from moisture, vibrations and shocks.

3.2 Assembly, dismantling or movement

3.2.1 Delivery of your lathe

Your lathe will normally be delivered only partially assembled in order to minimise transportation costs and to better protect it from damage in transit.

Before commencing any assembly or unpacking you should check that the lathe does not appear to be damaged, the packaging is not unduly damaged and that there are no places from which it appears items may have been lost. If you do find damage of this nature then advise the shipping company as soon as possible after receipt, certainly within two days.

3.2.2 Component checklist

Different models of lathe will be slightly differently configured and packed but the following should be identifiable:

- Lathe bed,
- "A" frame stand
- Headstock sub-assembly and electrical equipment, built-in for DB1000 2.1 and in a separate electrical cabinet and control box for DB1000 2.2
- Tailstock
- Banjo and Toolrest

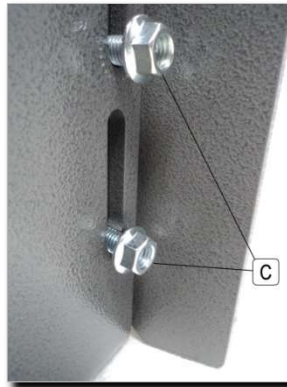
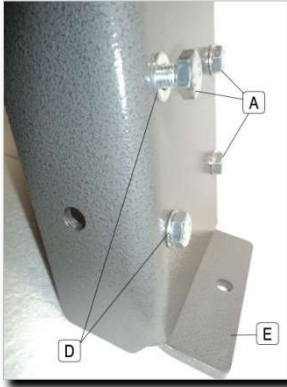
In addition to the readily-identifiable principal components of the lathe, the following items will normally be shipped in a separate accessories carton(s) unless already installed.

DB1000 2.1	DB1000 2.2
<ul style="list-style-type: none">• Knockout bar• 2 x Spindle lock pin• Drive centre Z4• Revolving centre• Spanner, 24mm x 19mm• Key for door/cabinet lock• Studding M16 x 200 mm• Nut M16• Anchor plate 120 x 50 x 15 mm• Instructions manual with CE-Certificate	<ul style="list-style-type: none">• Knockout bar• 2 x Spindle lock pin• Drive centre Z4• Revolving centre• Spanner 24 mm x 19 mm• Key for door/cabinet lock• Bolt M16 x 50mm• T-form plate M16• Instructions manual with CE-Certificate

Any shortages should be notified to the supplier within two days of receipt.

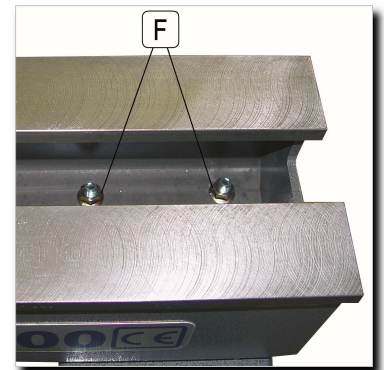
BED, SUPPORT, AND ADJUSTABLE FEET

Fasten the adjustable feet (**E**) to the support according to photos below. The M10 self locking nuts (**C**) are located on the inside, the M10 x 30 bolts (**A**) and M10 washer (**D**) on the outside. The M10 x 70 adjustment bolt (**B**) is also located on the inside.



Assemble the bed to the A-frame stand (or foot plates for the DB801/802/800) with the M10 x 30 (2 x 4pcs). The self-locking or blind nuts (**F**) are situated inside the bed.

Before mounting the other components onto the lathe, it is appropriate to place the lathe in its final position. Ensure that there is sufficient space left behind the lathe so that the headstock can be completely turned on the bed. Also ensure that there is enough space to the right of the lathe in order to be able to slide the tailstock of the bed.



Slightly loosen the 4 bolts (**A**) at the rear and front side of each stand. You can now position the bed perfectly horizontally by means of the setscrew (**B**) and adapt the height if necessary. There is an adjustable range from 50mm. Tighten the bolts (**A**) firmly.



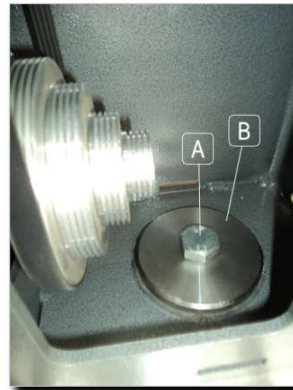
HEADSTOCK

The headstock should now be mounted on the assembled bed, proceeding as described below.

Firstly, identify the centring boss which projects from the underside of the headstock assembly (**B**). This serves as the pivot, around which the headstock rotates for turning “off the bed” and also locates the headstock centrally between the bedways when using the headstock in an alternative position along the lathe bed. When lifting the headstock onto the lathe bed, this boss must be positioned in the gap between the bedways so that the headstock assembly sits on its bottom face. Lift the assembly and place it carefully on the left hand end of the bed, over the A-frame stand but with all of the bottom face of the headstock enclosure firmly resting on the bed and with the motor in line with the bed. In this position, the headstock should be reasonably stable but it will topple easily if pushed: do not rotate the headstock at this stage as the assembly is not stable in the rotated position without its mounting bolts in place. Watch out not to squeeze your fingers between the motor and bed.

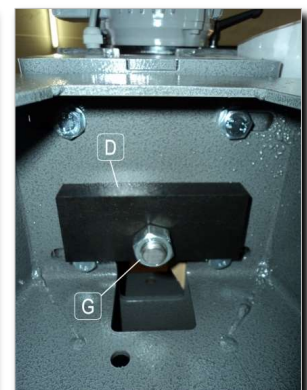
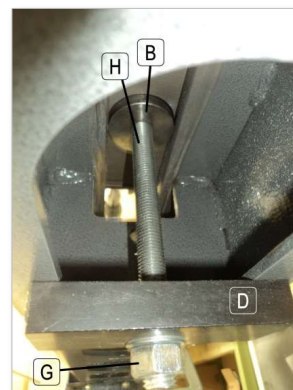
For DB1000 2.2:

Open the access door in the headstock and locate the bolt M16x 1.5 x50 (**A**). Put this bolt into the hole of the centre boss (**B**). Locate the T-shaped plate 70 x 56 mm (**C**) and place this plate on the underside of the headstock, between the bedways. Screw the bolt (**A**) into the plate (**C**). Screw the bolt fully home, but do not use any implements to tighten it in place.



For DB1000 2.1:

Completely open the access door and locate the section of M16 studding (**H**), approximately 200 mm in length. Working from underneath the bed, screw the studding into the centring boss (**A**) on the underside of the headstock. Screw the study fully home. Locate the bottom anchor plate (**D**), a steel plate approximately 120x50x15 mm thick. Place this over the studding (**H**) and secure it using the M16 nut (**G**). When finally positioned, the anchor plate should lie square across the bed, fully supported on the underside of the bed at both ends, as indicated in the accompanying photograph.



FREQUENCY INVERTER (DB1000 2.2)

The Vario system is normally contained within a separate dustproof enclosure which protects the equipment. The Vario enclosure must never be opened whilst the system is connected to the power supply. It is bolted to the inside of the left stand (see photograph). The necessary holes are already in the Vario enclosure and stand. Open the enclosure with the black plastic key which is fixed to the switch of the enclosure. Remove the 2 nuts at the outside of the enclosure. Whilst holding the enclosure in place, place the 2 bolts from the inside of the enclosure through the holes in the stand. Fix the enclosure with the 2 nuts. Connect the cable from the motor to the frequency converter via the blue plug. Connect the speed sensor cable to the frequency controller.

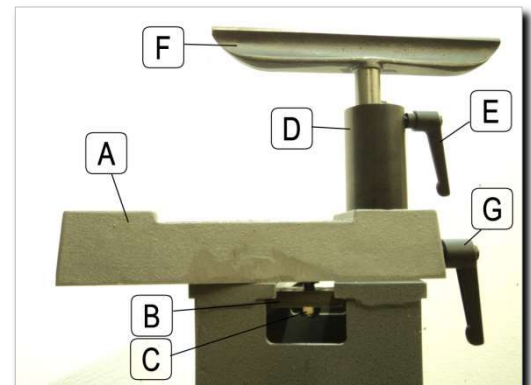


For the DB1000 2.1 models the frequency converter is built into the headstock.



TOOLREST SADDLE (BANJO)& TOOLREST

To fit the saddle (**A**) to the lathe bed is simply a matter of sliding it on from the tailstock end of the bed. Note that the anchor plate (**B**) only slides into the gap between the bedways one way around. Move the locking handle (**G**) left and right until you see the anchor plate at the lowest position. This will give maximum clearance between the anchor plate and the bedways. If required the position if the eccentric clamp system can be adjusted with the M12 self locking nut (**C**). Once the saddle is fitted, slide it to the required location, then drop the handle to left or right and press it lightly to lock the saddle in position. The toolrest saddle (**A**) of all machines is equipped with an adjustable socket (**D**). This allows for the toolrest (**F**) to be perfectly positioned (with regard to the workpiece), even when using the bowl turning attachment. Drop the stem of the toolrest into the socket after first ensuring that the lockscrew (**E**) is screwed out sufficiently far to clear the bore. Tighten the lock screw using the ratchet handle, with the toolrest held at the desired working height.



TAILSTOCK

The tailstock mounts onto the bed in a similar manner to the toolpost saddle. It also uses a similar camlock principle to lock the tailstock in place.

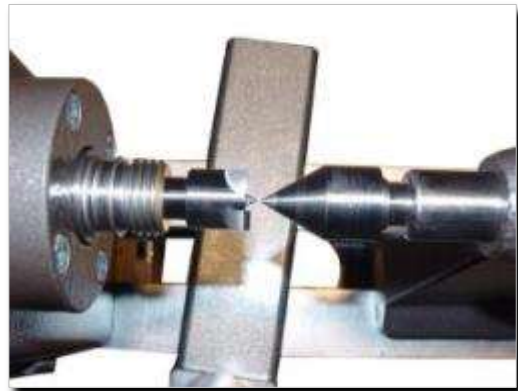
ALIGNING THE HEADSTOCK & TAILSTOCK

When turning between the centres, it is important that the centerlines of the headstock and tailstock are perfectly aligned. The alignment of the tailstock cannot be changed. Therefore one has to align the centreline of the headstock to the one of the tailstock. This can be done by using the supplied centres, a double conical shaft or optional allingment system DB0010.

Aligning using centers:

To align the headstock, first follow the instructions given above for turning the headstock into approximately axial alignment with the bed, but do not finally tighten the main clamping bolt/nut. Position the motor at the most left position on the bed for maximum centre-to-centre distance. The motor will hang outside the bed.

Insert the revolving centre into the tailstock quill and the drive centre into the headstock spindle throat. With the tailstock quill withdrawn as far as possible, bring the tailstock towards the headstock by sliding the complete unit along the bed. Now use the tailstock hand wheel to advance the live centre towards the headstock until there is approximately 1 mm clearance between the two points. Lock the tailstock firmly in this position. Rotate the headstock until the points of the drive and the live centre are in line. It will be found that tapping lightly on the side of the motor housing will allow the headstock to be rotated fractionally with more precision than trying to move the whole headstock bodily. Once correctly positioned, tighten the main locking bolt/nut in this position and close the belt access door.



Align with MT2 double conical shaft

By using a double conical shaft (available from www.willyvanhoutte.com WIVAMAC® Product reference: DBDBLCN) a perfect alignment can be achieved. Position the double conical shaft in the tailstock. Make sure the headstock is loose enough so that it can rotate freely in the position where it will be fastened. Slide the tailstock with the double conical shaft fully into the spindle of the headstock. Fasten the headstock by means of the M16 bolt or nut; different for DB801/802 and other models. Slide the tailstock back away. If the conical shaft remains stuck remove this from the loosened fixed head in the same way that you would use to extract a revolving centre from the tailstock.



4 SPECIFICATIONS

4.1 Objective

The lathe is built for artisanal turning of wooden objects. In addition to wood, similar synthetic materials can also be used, provided that such materials can be processed with the available cutting tools.



DO NOT USE THE LATHE FOR PURPOSES OTHER THAN THOSE DESCRIBED ABOVE.

Improper use: turning metal or synthetic objects which do not exhibit the same cutting properties as wood.

The processing of materials by which hazardous substances (fumes) are released with the processing.

4.2 Technical specifications

	DB1000 2.1	DB1000 2.2
4.2.1 Specifications		

Speed: Min- Max [Rev/min]		
V: Vario	150 – 3.100	90 - 3.150

Product dimensions (mm):		
Max. Distance between centres	900	900
Centre height	260	260

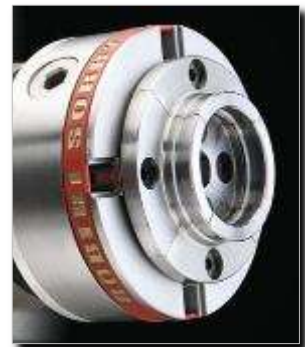
4.2.2 Tools and accessories

Only tools specifically for manually turning wooden objects may be used.



If in addition to the accessories supplied, other accessories are used, they must be suitable for the intended purpose.

When using other accessories on the headstock it should be taken into account that there is no protective cover provided. Only use a clamping chuck that is equipped with a protective ring around the claws.



4.2.3 Dust extraction

The user must provide a dust extractor.

The fact that the most diverse work pieces may be processed on the lathe, means that no fixed extraction point can be defined.

We recommend using an extractor equipped with an adjustable hose as shown below

The dust extractor must be fitted with a filter, suitable for wood dust and substances with threshold limiting values $<0.1 \text{ mg/m}^3$ as well as for carcinogenic substances.

The lathe is only provided for artisanal purposes; therefore a mobile vacuum cleaner suffices in most cases.



When used intensively, however, account must be taken of an increased risk of explosion. In this case, the dust extraction in its entirety should be constructed to be anti-static.

EXAMPLE OF VACUUM CLEANER SET-UP:



4.3 Physical working environment.



THE WORKPLACE MUST BE SUFFICIENTLY VENTILATED AND LIT.
THE LATHE MUST ONLY BE USED IN SUITABLE PREMISES.



THE LATHE IS NOT SUITABLE FOR USE IN AN EXPLOSIVE ENVIRONMENT.

Environmental conditions:

Air temperature: between -10 °C and +40 °C

Air humidity: no more than 50% at a maximum temperature of +40 °C, maximum 90 % at +20 °C, both without condensation.

4.4 Set-up - Work area

The machine must be solidly installed, and this on a sufficiently firm and level surface.

It is recommended to position the lathe in an adequately lit area.

At least 1 metre of free passage should be provided around the machine.
This zone is to be marked out as work zone.

The sound pressure of the machine is < 70 dBA.

Everything around the lathe should always be neat and tidy in order to prevent fire, slip or jolting hazard.

Always provide the necessary dust extraction, suitable for the material to be processed.



EXPOSURE TO WOOD DUST MAY CAUSE BODILY DISCOMFORT AND COMPLAINTS.

Some of these are merely annoying, sneezing and coughing for example. But the consequences may also be more serious.

Some people react allergically or get asthma after exposure to wood dust. In addition, there is growing evidence that prolonged exposure to wood dust may cause a particular form of cancer of the nose and paranasal sinuses.

Whether the effects occur and how likely it is, depends on a number of factors. For example, one person is more sensitive than the other and the degree of exposure plays an important role. The longer the exposure lasts, the greater the probability, and the higher the concentration, the greater the chance.

Moreover are not all forms of wood dust are equally harmful. Hardwood is placed on the list of carcinogenic substances wherein hardwood is defined as wood from angiosperm or broad leaf trees (for example oak, beech, meranti, but also birch and poplar).

	1	2	3	4	5	6
Softwood						
Pinewood	X	X	X	X		
Fir	X	X	X	X	X	X
Western red cedar	X	X	X	X		
Broadleaf trees						
Azobé	X					X
Balau	X	X	X	X	X	
Beech	X	X	X	X		
all types of Oak	X	X	X	X		
Iroko	X	X	X	X	X	X
Red Meranti	X					
Merbau/ Azfelia	X					

The above table is only an example and is not exhaustive nor binding

1. Dermatitis
2. Conjunctivitis
3. Nose Cold Symptoms
4. Shortness of breath (asthma)
5. Hyper-reactivity of the pulmonary alveoli
6. Itching

4.5 Installation and putting into service

The machine may only be installed by qualified, skilled and knowledgeable personnel.

4.6 Electrical connection

Connection voltage: 230V / Single

Frequency : 50-60 Hz

Power: 1PK/750W, 2PK/1.500W, 3PK/2.250W

The difference between the nominal and mains voltage may only amount to 5%.

The necessary fuses, earth-leakage switch and overvoltage protection need to be attached to the power supply.



WORK ON ELECTRICAL INSTALLATIONS MAY ONLY BE CARRIED OUT BY A SKILLED ELECTRICIAN.

An electrotechnical expert is a person with relevant training, skills and experience that enable him or her, to perceive risks and avoid dangers that are associated with electricity

5 OPERATING INSTRUCTIONS



ONLY PERSONS OVER 18 YEARS AND THAT HAVE HAD THE NECESSARY EDUCATION AND TRAINING MAY OPERATE OR USE THE MACHINE. TRAINEES MUST BE AT LEAST 16 YEARS OLD AND MAY ONLY WORK WITH THE MACHINE UNDER SUPERVISION BEFORE STARTING THE MACHINE, THE OPERATOR MUST SATISFY HIMSELF THAT THERE ARE NO OTHER PEOPLE IN THE WORK ZONE.

The operator must wear the prescribed personal protective equipment at all times.

- Clothing: No loose clothing so that nothing can be grasped by rotating parts
- Hair: Tie up long hair so that it cannot be caught up by rotating parts
- Other: Take off jewellery, watches, rings and everything that can be grabbed by the machine



BEFORE OPERATING THE MACHINE, FIRST READ THE SAFETY INSTRUCTIONS

Only 1 person may operate the machine

Make sure that nobody is within the working zone during start-up and operation.

5.1 Daily inspection

Daily inspection and minor maintenance procedures at the start of use.

Check for damage which could cause dangerous situations such as:

- Damaged electrical or mechanical components
- Operation of the emergency stop

5.2 Emergency instructions

- With audible or visible defects or faulty operation of the machine, its use is not permitted
- Immediately press emergency stop in emergencies

5.3 Operation

5.3.1 Operation of lathe with Vario-system

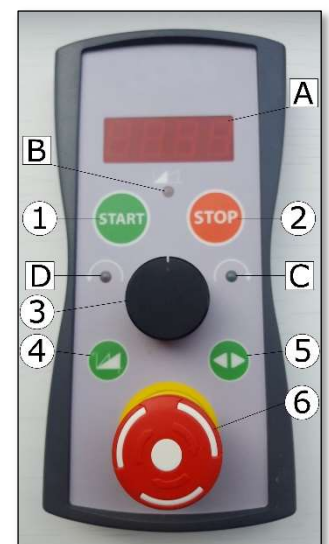
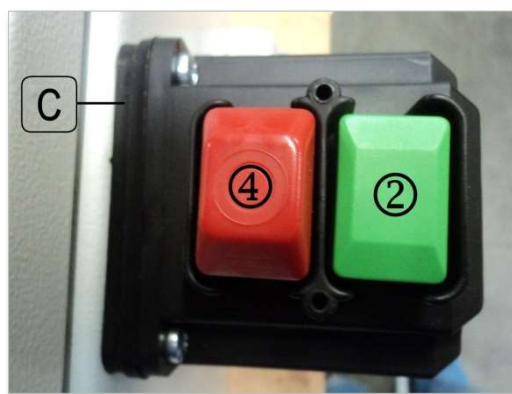
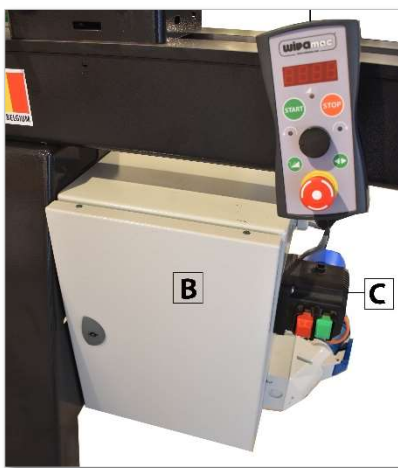
DB1000 2.1

1. Make sure the door of the headstock is closed and locked with the special key. Put this key in a safe place.
2. Plug the power cord into the outlet.
3. Turn the button **(2)** (Left/Stop/Right) to the STOP position.
4. Switch on the main power **(A)** by pressing the green button **(3)**.
5. The display shows the frequency.
6. Change the frequency by turning the speed button **(1)**.
7. Choose the turning direction switch button **(2)**.
8. To stop the lathe, switch the button **(2)** to the STOP-position.
9. If the lathe is stopped by pressing button **(4)**, place the switch **(2)** in the STOP-position, wait 20 seconds and then press the green button **(3)**.



DB1000 2.2

With remote control, CB=CONTROL BOX:



1) NVR main switch:

Before switching on the main switch, make sure that the emergency button "6" is not pressed in. (To disengage, turn the emergency switch "6" clock wise and allow wit to jump forward).

2) Control:

Start button "1":

The lathe will start and accelerate to the latest set speed (speed will depend on the position of the belt on the pulleys, see 4.2.1). The machine will accelerate to the latest set speed in 6sec. The rpm's (the speed will depend on the position of the belt on the pulleys).

Stop button "2":

- Stop, the lathe will stop and brake down in 6sec. After fully stopped one will hear a beeping noise, indicating that the machine is fully stopped.
- If stop is pressed again, the previous chosen speed will be erased from the memory. When started again, the machine will start at its lowest speed.

Rotary encoder "3":

- Controls the speed, depending on the belt position (real speed +/-10rpm can be read from the display "A" on the control box). The pulse generating rotary knob provides a positive clicking feedback and enables an accurate incremental change of the speed. Rubbing against the knob with the side of the fingers makes it possible to make fast changes to the speed when required.

Boost toggle button "4":

- The boost toggle button is only active during full stop. It activates the boost function that will reduce the default and factory set acceleration and deceleration time from 6sec, to 3 sec. It is the full responsibility of the operator to assess whether all circumstances are safe to do so. The machine manufacturer cannot be held liable if the operator made a wrong assessment. The indicator "B" illuminates orange to show that the boost function has been selected.

Toggle button forward/revers "5":

- Toggle button forward/revers is only active during a full stop and changes the machine status between forward/revers running. The indicator LED "C" illuminates green when the machine is stand-by indicating it will run forward when started. The indicator LED "D" illuminates red when the machine is stand-by indicating it will run reverse. In case the spindle runs, one of both will flash depending on the chosen rotation direction.

Emergency button "6":

- If the emergency button "6" is pushed in (activated) during running the frequency controller will cut the power to the motor. If pushed when the machine is running, the machine will come to a standstill, without initiating any powered action that could generate an extra dangerous situation than the one that caused the reason for an emergency stop necessity.
- When the emergency button "6" is pushed in, all three of the CB LED indicators; "B", "C" & "D" will flash together indicating that the emergency button still has to be deactivated in order to be able to run the machine again (To disengage, turn the emergency button "6" clock wise and allow wit to jump forward). The frequency inverter needs to be reset after every emergency stop by pushing simultaneous the start and stop button "1" & "2". All machine settings will become the default settings.

5.3.2 Special precautions for all lathes:

- Never open the access door of the headstock while the motor is turning.
- Disconnect the power supply before opening the access door.
- Wait at least 3 minutes before commencing maintenance or repair activities.
- Do not touch any buttons with wet hands.
- The operating temperature of the frequency inverter lies between -10°C and +40°C. The air humidity must not exceed 90%RH without condensation.
- The frequency inverter is automatically brought to a stop if the temperature is too high (mostly due to overload). If this happens, disconnect the power supply and open the access door to cool down the frequency inverter. Allow for the frequency inverter to be cooled down for approximately 15 minutes. Close the door and push the green button of the NVR. When the temperature of the frequency inverter has sufficiently dropped, the motor can be started again.
- Lock the door with the special key and put this in a safe place. Reconnect the machine back to the power supply and start the machine as described above in 5.3.2. in line with point 1).
- Ensure that dust do not enter the headstock.
- Regularly remove the dust of the frequency inverter by means of compressed air or vacuum cleaner.
- **!!!IMPORTANT!!!**: A frequency inverter allows for the motor speed to be varied from slow to fast very rapidly. Always ensure that the workpiece is mounted on the lathe securely, that the lathe is standing stable and firmly and that all preceding precautions have been observed. Non observance of these precautions can result in injuries.

5.4 Changing the Speed – Belt Drive

All Wivamac® lathes are equipped with a manual speed change transmission using a series of step pulleys of differing diameters. The drive is through a poly-vee-belt which provides a high load capability on a compact design: the pulleys features multiple small grooves into which matching corrugations on the inside of the belt locate.

- Switch off the main power and disconnect the power supply before opening the access door.
- Open the door of the headstock with the specially supplied safety key.
- Unlatch the Motor using the locking handle **(1)**.
- Raise the motor until the belt is loose.
- Lock the motor in the raised position with the locking handle **(1)**.
- The belt may now be moved onto an alternative pulley to change the speed.
- Unlatch the motor again and the motor weight provides the tension for the belt.
- Watch carefully whether the belt is correctly positioned on both pulleys. You can check this by turning the hand wheel.
- Lock the door with the special key and put this in a safe place. Reconnect the machine back to the power supply and start the machine as described above in 5.3.2. in line with point 1).



6 INSTALLING & REMOVING DRIVE & TAIL CENTRES

Both the headstock spindle and the tailstock quill are provided with a 2 MT (Morse Taper) “swallow” (the name for the final section of the hole in the spindle/quill). This enables any

equipment with a matching profile to be fitted into the swallow, where it will be retained by the self-locking taper. Note that the tapers need to be kept clear of dust and debris and any equipment inserted into the throat should be clean and free of surface defects which may damage the swallow area: failure to observe these simple precautions may result in Morse taper equipment not fitting or not being retained securely.

Check that any equipment that is used in the lathe has a solid end against which the knockout bar can bear. Some accessories from third parties are supplied with a hole bored through the rear of the Morse taper shank. In this case, if the hole is larger than 8 mm, the knockout bar will enter the hole instead of ejecting the equipment and may become jammed in the hole. Before using any such equipment in the lathe, plug the hole to provide a surface against which the knockout bar can bear.

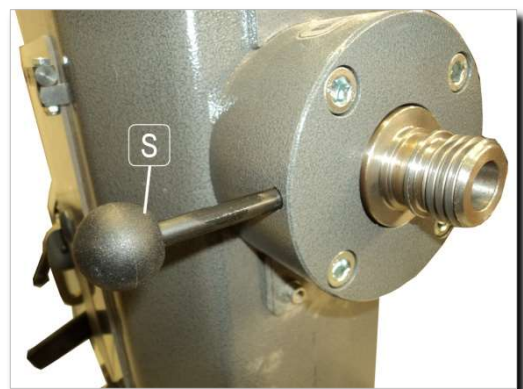
A knockout bar is supplied with Wivamac® lathes to enable Morse-taper equipment to be removed from the headstock and tailstock. It is introduced through the bore of the spindle/quill, as required, and lightly tapped on the end of the installed Morse taper equipment in order to remove it from the swallow. The knockout bar is NOT intended to be used as a punch or drift! Properly manufactured and installed Morse taper equipment does not require to be driven into place to seat it, nor will it spin in its seating, unless defective in some respect. Hence if the Morse taper equipment cannot be removed without resorting to hammering on the end of the knockout bar, you may be assured that the equipment is in some way faulty and should not be re-used until it has been rectified or replaced.

The black ejection/screw thread protection nut has to be put in place before inserting any tool into spindle. The ejection nut must be used to eject the tool from the spindle. Lock the spindle (see Chapter 7 below) with the locking pin and turn the ejection nut using a 2nd pin. The tool will be pressed-out by the ejection nut.

The tailstock features auto-ejection of Morse taper equipment. To eject a piece of equipment using this facility, the tailstock hand wheel is simply wound counter-clockwise to withdraw the quill as far as possible and the equipment will be loosened automatically. However, this feature cannot be used if the Morse taper accessory used has a short shank: a full length shank and/or ejection section are required for this facility to operate. Equipment that cannot be auto-ejected can be removed using the knock-out bar as described above.

7 USING THE SPINDLE LOCK

The spindle locking pin (**A**) is provided to hold the spindle stationary whilst, for instance, equipment is screwed onto or off the spindle nose thread. The spindle is locked by inserting the short locking pin, which is finished with a spherical knob, into the bush on the front side of the front bearing housing, as shown. Put the lock pin into the hole and rotate the spindle with the handwheel until the pin is felt to drop into the hole in the spindle. Push the lock pin in to its full depth to ensure that the spindle is fully secured.



!!! Do not attempt to start the lathe whilst the lock pin is in place!!! Remember to remove the lock pin completely when you have finished working on the spindle and before attempting to start the lathe.

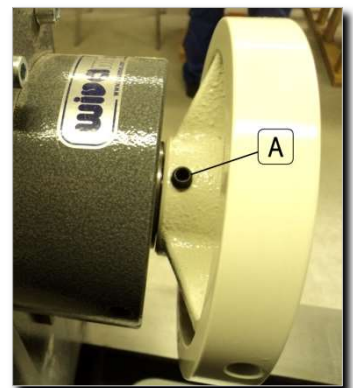
8 MOUNTING AND REMOVING CHUCKS & FACEPLATES

In addition to the option of mounting equipment using the Morse taper throat of the headstock, the spindle also features an M33 x 3.5 mm screw thread. The thread is right-handed. This is a commonly-used thread for lathe equipment and means that a wide selection of equipment is available to fit onto the spindle. To mount equipment such as a chuck or faceplate onto the spindle, the accessory should be held against the outside end of the spindle, with its axis in line with the spindle axis to avoid any chance of cross-threading. The hand wheel at the rear of the spindle is then used to rotate the spindle by pulling the top of the hand wheel towards the operator. Once the thread has engaged, the equipment can be completely screwed into place either by continuing to rotate the hand wheel, or by rotating the equipment to screw it onto the thread. The lathe must not be started under power until the threaded accessory has been fully wound on to the spindle and the back face of the accessory is in contact with the shoulder on the spindle.

Removing such accessories normally requires the use of the spindle lock (see above). First unscrew the locking setscrew in the faceplate/chuck. With the spindle locked, the accessory is simply unscrewed from the spindle thread and lifted clear. Take care when removing heavy items such as chucks or large faceplates as the weight can suddenly be transferred from the spindle to the supporting hand. Remember to remove the spindle locking pin after removing the accessory and before re-starting the lathe.

A final note of caution if the lathe is to be run in the reverse direction: be aware that there is a strong likelihood that a chuck or faceplate upon which a substantial or out-of-balance work piece is mounted will become unscrewed from the spindle if the lathe is started, running in the reverse direction. This is because the inertia of the spindle load overcomes the friction force between the chuck/faceplate etc and the spindle, so the spindle simply rotates whilst the work piece remains stationary! This can be prevented by using equipment with a locking setscrew (**A**) which bears on the spindle, preventing such equipment rotating independently of the spindle. It is also less likely to occur when using the Vario speed control since that features soft-starting.

Equipment without this setscrews can only be used on right turning machines only, however the risk then also remains that when braking too quickly, the clamping system may become detached.



8.1 Using Spindle Indexing

The DB1000 2.2 is equipped with a Spindle Indexing. This consists of a collar on the outside of the largest pulley on the spindle, which is drilled with 24 equally-spaced holes, as illustrated. Each hole is sequentially numbered (1 to 24) so that it is easy to locate the next hole required when working through a sequence of rotation. In this way, the workpiece can be divided into 2, 3, 4, 6, 8, 12 or 24 sections.



The spindle is fixed at the desired positions by using the spindle locking pin inserted through the bush on the rear of the headstock casing, as shown in the photograph. Put the lock pin into the hole and rotate the spindle slightly with the hand wheel until the pin is felt to drop into the hole in the indexing ring. Push the lock pin in to its full depth to ensure that the spindle is fully secured. Repeat this process as many times as required to complete the work piece, withdrawing the pin each time to permit the spindle to be rotated.



!!! Do not attempt to start the lathe whilst the lock pin is in place. Remember to remove the lock pin completely when you have finished working on the spindle and before attempting to start the lathe!!!

8.2 Rotating the Headstock for Large-diameter/Bowl Turning

It is often more convenient to turn the headstock of the lathe to improve access to the workpiece than it is to work with the axis of rotation parallel with the lathe bed. This is particularly advantageous when turning faceplate work.

In case you want to slide or turn the headstock follow the instructions below:

- Switch off the main power and disconnect the power supply before opening the access door.
- Open the door of the headstock with the specially supplied safety key.
- Loosen the central locking bolt, but DO NOT rotate the headstock at this stage. Slide the headstock assembly bodily towards the tailstock but keeping its axis parallel with the axis of the lathe bed. The headstock assembly may now be rotated to the desired position. Take care not to trap any cables when rotating the headstock. Finalize the position of the headstock and tighten the central locking bolt.
- The headstock can be tightened in any desired position on the bed. If however the headstock is swivelled for more than 25°, it becomes difficult to place the toolrest in the correction position with regard to the workpiece. The headstock can also be swivelled 90° when turning large diameters or unbalanced workpieces.
- In this case, it is recommended to slide the headstock towards the middle of the bed and fix it with the central bolt and 2 supplied extra plates left and right of the central bolt.
- The toolrest holder is now fixed to the bowl turning attachment (option) instead of to the bed.





9 SAFETY INSTRUCTIONS

- Only personnel that have had the necessary education and training may operate this machine. Before operating the machine, one must first have read and understood these instructions.
- The operator must wear the prescribed personal protective equipment at all times.
- Always wear head protection, goggles and dust mask.
- Ensure that the machine is on a stable and solid surface.
- Do not leave the machine running unattended, always turn off the master switch after use.
- When working with the machine, all safety devices and covers must be mounted on the machine.
- No wood chips or wood waste must be left lying around the machine's workplace.
- Check the electric connections control and do not use defective wiring and cables
- Keep children away from the electric mains to the machine.
- Keep the workplace and passageways clear of obstructions
- Safety devices must not be removed or be rendered inoperative.
- Guards should always be in their place when using the machine.
- Put the toolrest as close as possible to the work piece. Only do this when the machine is not rotating
- The circumferential speed of the work piece should not exceed 25m/s
- Provide work pieces for clamping between the centers on both sides of a centre hole.
- Allow large work pieces and work pieces which are not in balance to rotate at the lowest speed.
- Before switching on the machine, check that the work piece is firmly in place.
- Before switching on the machine, remove chuck keys and clamping pins
- Always hold wood turning tools firmly with both hands.
- Work pieces with cracks may not be used.
- Ensure the correct setting of the rotational speed on the machine.
- If you leave the workplace, switch off the motor. Remove the plug from the plug socket.
- Always close belt covers.
- Never slow down the work piece by hand and never carry out measurements on the rotating work piece.
- Only work with properly sharpened tools.
- The machine may only be operated in compliance with the applicable safety regulations. Malfunctions that impair safety must be resolved immediately.
- The machine is constructed according to the latest state of the art and recognized safety regulations. Even so, during the work some risks may occur.
- Only process selected wood without defects such as knots, transverse cracks, surface cracks. Wood with defects poses a risk while working.
- Connection cables that do not meet the requirements may result in electrocution.
- Furthermore, in spite of all precautionary measures being taken, risks may exist that are as yet unknown.
- These other risks can be minimized if the "safety suggestions" and "use as directed" and the instructions for use are observed in their entirety.
- In case of imminent danger the emergency stop should be used



BEFORE CARRYING OUT ANY WORK ON THE LATHE, THE PLUG MUST BE REMOVED FROM THE POWER OUTLET AND THE POWER SUPPLY DISCONNECTED AND ONE SHOULD WAIT UNTIL ROTATING PARTS HAVE COME TO A COMPLETE STOP

Risks	Prevention measures
Bodily injury	Prior to using the machine, first read the manufacturer's instructions. Only use the machine if you are familiar with it. Prior to use, check the machine for visible defects. Ensure that there are no unauthorized persons inside the work zone. In no case should the installed safety devices be tampered with.
Dust, clamping 	Always wear safety goggles or a face shield Use a suitable dust mask, depending on the materials used For wood that is at least a P2 mask
Stumbling, falling	Keep the demarcated working zone free from obstacles Always immediately clear up leaked or spilled products and respect the local environmental regulations in this respect.
Electrocution 	Have damaged electrical components repaired immediately Prior to carrying out any work on the machine, always turn off the power supply. Unplug; with direct connection, apply a lock to the master switch and remove the key.
Injuries or ejecting components	Always position yourself so that you always avoid imminent danger It is forbidden to lubricate a rotating machine Use only suitable materials to be processed Do not use cracked or glued wood Adjust your working speed in relation to the work piece
Rotating components	Never leave the lathe running unattended Never allow your grippers to rotate freely
Being grasped/caught up	Never put your hands or fingers in a rotating work piece When sanding, do not put an abrasive belt around the work piece Preferably use a holder for the abrasive paper
Cleaning	Before cleaning the machine, switch off the power supply If chemicals are used with the machine maintenance, first read the safety instructions of the products and always wear the prescribed protective equipment.

10 GENERAL MAINTENANCE INSTRUCTIONS



**ALWAYS SWITCH OFF THE POWER SUPPLY
REMOVE THE PLUG FROM THE PLUG SOCKET.**

In no case should the installed safety devices be tampered with. When removing guards or safety devices for repair or maintenance, always replace these before releasing the machine.

10.1 Cleaning & Corrosion Prevention

Users should be aware that even “dry” wood can have a significant moisture content and this moisture can cause corrosion of the untreated surfaces of the lathe. Particular care needs to be taken when using “wet” or “green” wood since the moisture content of these timbers is significantly higher and will consist of a significant amount of “free” water held within the cell structure of the timber. Furthermore, there are a number of timbers whose sap is strongly corrosive – an example is olivewood – which will cause corrosion of both tools and the lathe components within a very short space of time.

The best way to remedy these situations is to avoid them! Keep the lathe surfaces clean and free from wood dust, shavings and other sources of moisture. Be aware that finishes and surface treatments applied, or dried, with the workpiece rotating will cause the finish to be thrown off through centrifugal action and this finish can build up on lathe surfaces such as the bedways. It is recommended that any such spillage be removed as soon as possible using an appropriate solvent if necessary. Removal of spillages is made easier if the bedways and other bare metal parts are regularly treated with a surface finish which minimises the corrosive effects discussed: typical of such finishes is lubricating wax, which is available from a number of manufacturers. An alternative is to wipe a thin film of oil over all exposed surfaces, though this can cause staining of clothes and workpieces and should be removed each time before using the lathe, then re-applied afterwards. Wax polish may also be beneficially used for this purpose. Whatever is used, a protective film, regularly re-applied will do much to extend the trouble-free life of your lathe and will help maintain it in its original pristine condition.

10.2 Bearings

The normal operating temperature of the bearings is 60° to 70°C. This temperature is evidently influenced by both time and speed. Prolonged operation or high speeds may result in a temperature rise of the rear bearing to 90°. Although the bearing at the motor side is equipped with a grease nipple, it is theoretically greased for life (which is about 8.000 hours).

In practice and depending on the operating time, it may be useful to grease the rear bearing maximum once a year. Greasing can only be done to a low extent and with a grease compatible with the original grease. Greasing too often or too much can lead to additional development of heat.

10.3 Replacing the drive belt

Although there are detail differences between the various models in the DB range, the general principles for replacing a broken or stretched drive belt are the same. Before starting, obtain a suitable poly-vee belt of the original manufacturer's specification: it is important that this is an exact match for the belt originally supplied with your lathe. Proceed as follows:

1. Switch off power and disconnect the lathe from the power supply. Remove any workpiece, chuck, faceplate or other equipment mounted on the lathe spindle.
2. Raise and secure the motor so that the drive belt is not tensioned. Slip the drive belt off the forward end of the motor pulley so that it hangs free from the upper (spindle) pulley.
3. Remove the handwheel from the spindle. **!!! ATTENTION: left hand thread!!!**
4. Loosen and remove the two hexagon head socket grub screws securing the rear bearing onto the spindle. These screws are located in the black collar forming part of the inner race of the bearing.
5. Unbolt the rear (flanged) bearing from the rear of the headstock casing by unscrewing and removing the four (4) hexagon headed fixing bolts.
6. Withdraw the rear bearing approximately 10-20 mm towards the end of the spindle. NB: There is no requirement to remove the bearing from the spindle completely simply to change the drive belt.
7. The spindle will now be supported by the front bearing(s) only so care should be taken not to overload the bearings or spindle whilst in this unsupported state. You can support the spindle by using a double conical MT2 taper shaft as mentioned in 2.3.
8. The original drive belt can now be slid towards the rear of the spindle and through the gap between the rear of the headstock casing and the spindle until it can be fully removed from the spindle.
9. The replacement belt should be looped over the end of the spindle and then slid forward, over the bearing and through the hole in the rear of the headstock casing, reversing the above procedure, until it is in position around the spindle pulley.
10. The rear bearing can now be re-mounted, taking care to clean up (carefully, with a fine file) any burrs which may be present on the spindle caused by the grub screws which secure the bearing to the shaft. If it is necessary to remove burrs in this manner, ensure that none of the filings removed in the process fall into the bearing or other precision parts of the drive system or electronics/controls. Ensure that the four bolts retaining the bearing onto the rear of the headstock casing are fully tightened, then tighten the grubs screws locking the bearing collar to the shaft.
11. Re-fit the rear handwheel.
12. Place the drive belt into position over the lower (motor) pulley and position it on the desired pulley pair, selecting a low speed combination for testing the new drive belt installation.
13. Lower the motor to tension the belt and lock it in position. Close and secure the access door.
14. Re-connect the power supply, switch on and test the lathe. If all is satisfactory, the workpiece may be replaced on the spindle and the lathe restored to normal operation.



10.4 Tightening the camlocks on tailstock and banjo/toolpost

In time it may be found that the camlock clamps on the tailstock and/or banjo/toolpost no longer lock as tightly as required. This can be simply remedied. Release the locking lever on the component to be adjusted. Adjust the clamping by tightening the M12 locking nut. The clamping force of a camlock is optimal when about 5-10 degrees from its highest point.

10.5 Mechanical

Prior to removing components, mark them appropriately to ensure correct replacement.
Use only genuine replacement components.

Pos	Description	Periodicity	Action
	Bearing	Monthly	Check for wear and play, if necessary re-lubricate or replace.
	Motor	Monthly	Check power consumption Check for vibration and noise.
		Every 6 months	Check pulley motor screws, pulley shaft, bearing fastening

10.6 Electrical

Regular inspection of the electrical connections and the operating unit is recommended

- daily * check the operation of the emergency stop circuit
- weekly * Check for damage to cables
- 3 monthly * vacuum clean cabinets
- * inspect clamps
- * check cables and electric wiring

Connections and repairs to the electrical part of the machine may only be carried out by a qualified technician.

11 REMOVING AFTER USE.

After taking the supplied components or wood lathe out of use, these should be removed in an environmentally friendly manner. The locally applicable regulations at the time of removal should be respected.

The plastic components should be separately removed.

The metal components can be scrapped.

PRODUCT SPECIFICATIONS

The specifications in this document are not binding. Wivamac® reserves the right to change the machines and specifications hereof without prior notification.