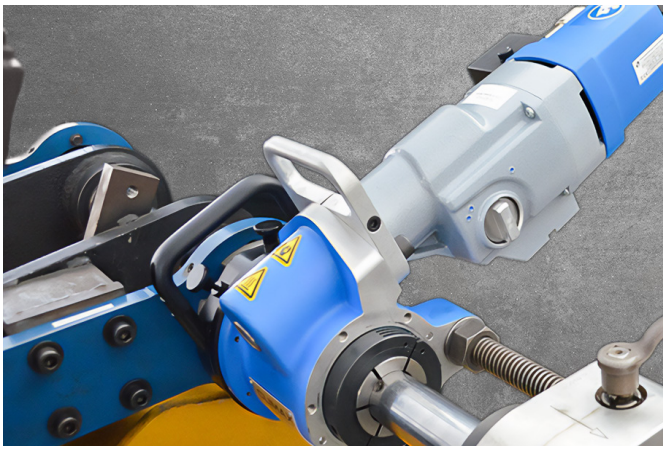
EIBENSTOCK EAU 34/4 MOTOR

By David Briggs, Sr. Controls Engineer at CLIMAX - October 2021

The electric drive used on the CLIMAX BB5000 line boring machines uses an Eibenstock EAU 34/4 motor for the rotational drive. These motors produce relatively high horsepower in a small package. While this is good, the downside is that the motors produce a lot of heat and can have trouble dissipating that heat, primarily when running under high loads and at slow speeds. This is true of all series-wound motors like this, such as Milwaukee, Husqvarna, and Dewalt. To get the best service life out of your motor, you should run the motor at the highest speed possible. To get the best service life out of your motor, you should run the motor at the highest speed possible.



The Eibenstock EAU 34/4 motor has a 4-speed gearbox. For each BB5000 line boring machine setup, select the lowest gear you can (highest motor speed). Try to always run the motor at no lower than 50% of full speed when under heavy loads—the more cooling air passing through the motor, the better.

FREQUENTLY ASKED QUESTIONS AND TROUBLESHOOTING

1. Why is there a pause before the motor starts when I press the start button?	The motor has a built-in speed controller, which includes a soft start/soft stop function. This feature protects the boring bar power train and the workpiece from abrupt speed changes and sudden starts/stops, which could damage the tool or leave a poor surface finish.
2. Why does the motor need a remote control box?	The remote control box provides the OSHA-required safety features of an emergency stop, protection from unexpected startup, and the ability for the operator to stand clear of a potential hazard zone when starting the machine.
3. How much load will the motor take?	The Eibenstock EAU34/4 motor is rated at 20 amps full load. It can be run continuously at 20 amps under certain conditions. Ensure the motor is running at a minimum of about 50% of full speed so that the internal fan cooling is effective and monitor the motor to ensure it does not overheat. If the motor still heats up, then either take a lighter cut or turn the motor off and allow it to cool periodically. Be sure to monitor the temperature of the output gearbox as well as the electric motor.
4. The motor shaft stopped turning, and there was a loud “buzzing” noise.	The motor has an internal clutch that protects the gears from damage due to overload. The loud noise is the spring clutch slipping. Stop the motor, disengage the tool from the workpiece and restart the cut with a less aggressive feed or a shallower depth of cut.
5. The motor was running fine, and it just stopped. It will not restart.	This motor has an internal temperature sensor in the field windings. If the windings get too hot, the speed control will automatically shut off to protect the motor from damage. Turn the power off at the control box, wait a few minutes for the motor to cool off, and then restart the motor. When running under heavy load, be sure to select a low gear, which will keep the motor turning faster and provide better cooling. Also, try taking a lighter cut.

About the Author: *David Briggs is the Senior Controls Engineer at CLIMAX, the world’s foremost manufacturer of portable machining, welding, and valve testing equipment. For the past 20 years, David has been working closely with on-site machinists, helping them to be successful in their most challenging projects.*

FREQUENTLY ASKED QUESTIONS AND TROUBLESHOOTING (CONTINUED)

6. How often should the brushes be checked?	Under normal operation, the brushes in a new motor should last around 200 hours of operation. Brush life will be shortened if operating continuously under heavy loads or at high temperatures, or in dirty environments where abrasive grit may enter the motor and get on the commutator. If one brush is wearing substantially faster than the other one, it is a sign that the windings have been damaged, and the motor will need to be serviced.
7. There is arcing at the brushes.	A certain amount of arcing is normal. The arc should be orange or yellow and only show some small feathery sparks. An occasional small flash of white spark is OK too. If you see continuous balls of white or blue arc, this is excessive. Try removing the brushes and cleaning the commutator. If the arcing continues for more than a few minutes, then try replacing the brushes. If new brushes do not solve the problem, then the motor is likely in need of service.
8. The motor runs at full speed and will not slow down.	1. The motor has an internal speed sensor that provides feedback to the speed controller. If this speed sensor fails, the controller will go to full speed output and not respond to the operator input “speed knob.” Replace the sensor. 2. The “Speed Knob” operator input potentiometer may have failed. This is a 100K Ohm potentiometer and can be easily checked with a multimeter. Remove the back cover of the motor, unplug the two-speed reference conductors from the speed controller and test with a meter. The readings should vary smoothly from 0-100K Ohms as you turn the knob.
9. The motor will not start	1. Check to ensure that there is 120V mains power at the outlet where you plugged in the remote-control box. A breaker could have been tripped back at your distribution panel. 2. Unplug the power cable from the motor, press the start button and check to see that 120V is present at the end of the cable. This will verify that the remote-control box is functioning correctly and the power cable between the motor and the control box has not been damaged. If power is present, proceed to step 3. If power is not present, have a qualified person check out the internal components of the starter box. 3. Turn the power off. Plug the power cable into the receptacle on the motor. Be sure to seat the cable all the way into the receptacle. Push on the cable and wiggle it slightly while you turn the locking collar. 4. Check the brushes. Make sure they are in full contact with the commutator. The minimum length of the brushes is ½ inch. If they are shorter than that, they may not be making contact with the commutator. 5. Check that the brushes are floating freely in the brush holder and are not stuck. 6. Make sure the coil springs are correctly installed and are pushing the brushes into the commutator. 7. If you are sure the motor is getting AC input power and the brushes are OK, check to ensure there is power at the brushes when the motor is turned on. There should be 95-100 VAC present when at full speed. If there is no power present at the brushes, then the motor speed controller has likely failed. If there is power present, then the motor windings have likely failed.
10. What type of oil is used in the gearbox, and how much?	1. Regular 30 weight non-detergent oil. 2. Fill roughly halfway up to gear shift lever. DO NOT FILL 100%; it will cause hydrolock.

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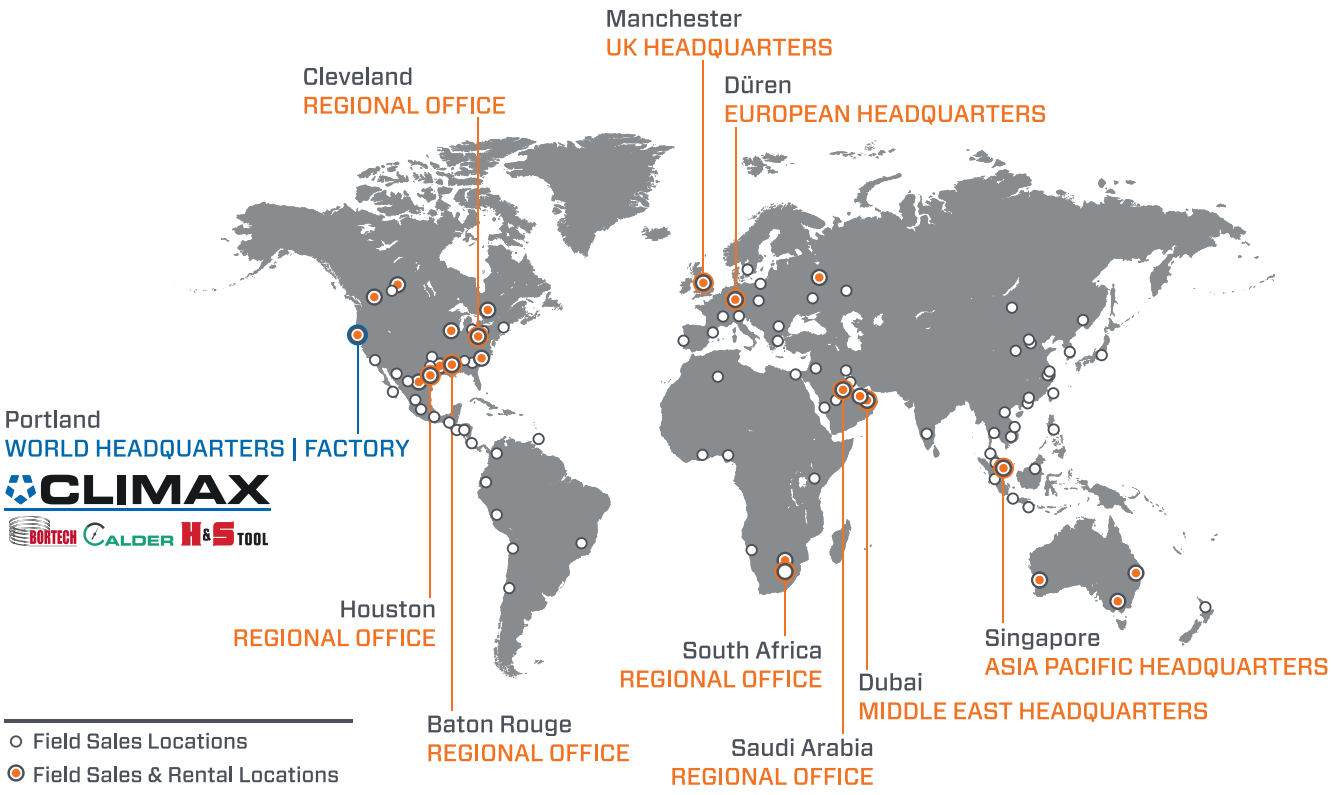

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