

Installation and Operation Instructions

X-20 Heavy Duty Slider



ONEFINITY

One Machine Infinite Possibilities

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This manual serves to familiarize you with your Onefinity CNC machine and provide all necessary information required to operate the machine safely and professionally.

This manual is applicable for the Onefinity Woodworker and Onefinity Journeyman, hereafter referred to as Onefinity.

Please completely read this manual before the first commissioning of your machine. In order to minimize the risks of injury and/or material damages, please only commission the machine and the corresponding control when you are sure that you have completely understood these instructions!

Please contact us for any further questions. Please find our contact info on page 20 of these instructions.

Please always keep these instructions nearby the machine. You should always have them readily available when you want to look up something.

Please only use this machine according to its intended use.

We cannot be held liable for persons or material damages which are caused by using the machine other than the intended use, handling which does not comply with the common use of a CNC machine or if safety regulations are not obeyed

In case of improper maintenance **(refer to page 18)** and/or wrong operation of the individual components your warranty claims are omitted.

We reserve the right to perform future technical enhancements on the machine and its components.

General Instructions:

These operating instructions explain the Onefinity and the correct handling of the CNC system. Please read these operating instructions and accompanying documents in their entirety before commissioning of the system in order to become familiar with the characteristics and the operation of the product. The improper operation of the CNC gantry milling system can lead to damage to the product and property and can cause serious injuries, electric shock and / or fire. It is imperative to adhere to the safety instructions listed in these operating instructions at all times. Should you have any questions or concerns prior to initial use of the CNC system or the need for further information, do not hesitate to contact us prior to the commissioning of the CNC system.

Safety Instructions and Protective Measures:

(General Safety Warnings for the Use of Power Tools)

Work Area Safety

NOTICE: Keep work area clean and well lit. Cluttered or dark areas invite accidents.



Caution: Do not operate the power tool in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.

NOTICE: Keep children and bystanders at a distance while operating a power tool. Distractions can cause you to lose control and can result in accidents.



Caution: Operate the Onefinity only in interior spaces on a solid, horizontal table or workbench.

Electrical Safety:



Warning: Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with grounded power tools. Unmodified plugs and matching outlets will reduce the risk of electric defects and malfunctions.



Warning: Do not expose power tools to moisture. The power tool is only suitable for indoor use. Water entering a laser tool will increase the risk of electric shocks.

Personal Safety:



Caution: Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired and/or under the influence of drugs, alcohol or medication. A moment of inattention while operating a power tool may result in serious personal injury.

NOTICE : All persons who operate the power tool must have read and fully understood all relevant safety and operating instructions. Misunderstanding may result in personal injury.



Caution: Use personal protective equipment. Always wear eye protection. Protective equipment, such as a suitable dust mask or ear protection, reduces the risk of injuries.

NOTICE: Dress properly. Do not wear loose clothing or jewelry. Pin your hair above your shoulders so that it cannot get caught in the Ball Screws and linear guides or moving parts.



Caution: This tool is controlled by a computer. During operation, it cannot be controlled directly. Lack of caution or expertise as well as program errors can lead to unexpected movements.



Caution: Do not touch the insertion tools or motors as they can heat up significantly during operation.



Caution: Never place any parts of the tool or accessories in the mouth as this can lead to serious injuries.

Protective Measures:

The Onefinity has been constructed for advanced users and is only to be operated by technically skilled persons above the age of 16. The CNC gantry milling system as well as associated tools, small parts and electrical components are to be stored outside the reach of children. The operator is solely responsible for understanding and reading the machine user guide and all relevant operating instructions in their entirety. These documents should always be stored in immediate vicinity of the machine. The manufacturer's instructions concerning the CNC machine and the tools, such as the milling spindle, are to be adhered to. The CNC gantry milling system is only to be used in a technically perfect condition which is to be ensured prior to each operation. The emergency switch as well as, if applicable, additional safety devices, always need to be easily accessible and fully functional. The use of liquids with the machine, such as the application of a coolant pump, is prohibited as it can damage the electronics. The use of lubrication systems is allowed. Please take into consideration that in this case the MDF machine table is not used as its MDF panels can swell and, thus, be destroyed.

Use of the Power Tool:



Caution: Do not alter or misuse the tool. Any alteration or modification is a misuse and may result in serious personal injury.



Caution: Disconnect the plug from the power source before you make any adjustments, change accessories, or store the tool. Such preventative safety measures reduce the risk of starting the power tool accidentally.



Caution: Store idle power tools out of the reach of children and do not allow persons unfamiliar with the laser tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.

NOTICE: Use the power tools, accessories etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation with high probability of superficial injury.

NOTICE: Do not reach into the area of the rotating insertion tools. The proximity of the rotating tools to your hand may not always be obvious.

NOTICE: Never use dull or damaged insertion tools. Sharp bits must be handled with care. Damaged bits can snap during use. Dull bits require more force to cut the tool, possibly causing the bit to break.

NOTICE: The speed and feed of the bit when carving, routing or cutting is very important. Always observe the recommended speed and feed for the particular bit.



Caution: If the workpiece or bit becomes jammed or bogged down, turn the power tool "OFF" by the switch. Wait for all moving parts to stop and unplug the tool, then free the jammed material. If the switch to the tool is left "ON", the tool could restart unexpectedly causing serious personal injury.

NOTICE: Do not leave a running tool unattended, turn power off. Only when tool comes to a complete stop and is disconnected from the mains it is safe.



Caution: Do not touch the bit or collet after use. After usage bit and collet are too hot to be touched with bare hands.

NOTICE: Do not allow familiarity gained from frequent use become commonplace. Always remember that a careless fraction of a second is sufficient to inflict severe injury.



Caution: When using the end mills, V-bits or cutters, always have the workpiece securely clamped. Never attempt to hold the workpiece with your hands while using any accessories. These tools can jam easily in the material, and can kickback, causing loss of control resulting in serious injury.

Care of the Power Tool:

NOTICE: Maintain the tools. Check for misalignment or binding of moving parts, breakage of parts and any other conditions that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.

Additional Safety Instructions



Caution: Depending on the application field of the machine (private or commercial), observe the applicable occupational safety and health, safety and accident prevention and environmental regulations.



Caution: Some dust created by cutting, milling or other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are: Lead from nonferrous metals with lead content, carbonate from carbon fiber, arsenic and chromium from chemically treated lumber. Your risk from exposures to these varies, depending on how often you perform this type of work. To reduce your exposure to these chemicals, work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

Safely dispose of milling debris — recycle or safely dispose of milling debris and dust, keeping in mind flammability, (potential) spontaneous combustion, and chemical considerations. Even natural materials can have surprising implications for disposing of them, *e.g.*, walnut wood dust is allelopathic (inhibits plant growth) and an irritant to the skin and breathing tract and potentially poisonous to some animals in addition to the typical spontaneous combustion hazard which sawdust poses.

Personal Protective Equipment:

When working with the CNC gantry system, the operator has to wear at least the following personal protective equipment and has to be compliant with the below-mentioned safety aspects: - Safety goggles for protecting the eyes against flying chips etc. - Ear protection for protecting the ears against sound and noise. - No wearing of clothes which can get caught in the machine, such as ties, scarves, wide sleeves etc. Additionally, jewelry and especially long necklaces and rings are to be dispensed with. - Shoulder-length or longer hair is to be secured with a hairnet or a hat to prevent it from getting caught in the linear guides and / or rotating tools. Prior to all adjustments to the machine, its control or system-guided tools, such as the Milling Motor, the Drag Knife or the Hot Wire Cutter, the plug is to be disconnected from the power source. Never hold the workpiece to be processed with your hands. It is mandatory that the workpiece is securely fixed on the machine table. Otherwise there exists a high risk of injuries!

Emergency Stop Switch :

The emergency stop is located on the top of the Controller housing. In order to be able to intervene at all times, the emergency stop has to be positioned in a suitable place.





By pressing the emergency stop switch, the emergency stop is triggered. The control is interrupted. Additionally, the control software receives the signal to stop the operating process. The machine stops immediately.

ATTENTION! The emergency stop switch can only effect the stop of all components if these components are electronically connected with the emergency stop switch.

If you want to use a system-guided tool, such as a milling and drilling motor, that features a separate ON / OFF switch and that is NOT controlled via the PC, you have to make sure that it is expertly connected with the emergency stop switch. If you do not comply with these requirements, the system-guided tool will continue to run although you have activated the emergency stop switch leading to a high risk of personal injury and damage to property! If you have any questions, please do not hesitate to contact us!

Residual Risk:

Despite all safety precautions against the contact with rotating or hot tools and the protection from crushes, a residual risk remains due to a careless handling and automatic movements of the CNC system.

Symbol	Name	Explanation
	Symbol: Read manual	Alerts user to read manual BEFORE first commissioning
	Symbol: Wear ear protection	Alerts user to wear a hearing protector
	Symbol: Wear safety glasses	Alerts user to wear protective glasses
	General warning symbol	Alerts user to warning messages

Read the following carefully before operating the machine.

1. Keep the working area clean and ensure adequate lighting is available.
2. Do not wear loose clothing, gloves, bracelets, necklaces or ornaments.
3. Do wear face, eye, respiratory and body protection devices as indicated for the operation or environment.
4. Ensure that the power is disconnected from the machine before tools are serviced or any attachment is to be fitted or removed.
5. Never leave the machine with the power on.
6. Do not use dull, gummy or cracked cutting tools.
7. Ensure that the keys and adjusting wrenches have been removed and all the nuts and bolts are secured.
8. Hearing protection — ear plugs or muffs, for long jobs doubling up on ear plugs or muffs may be desirable. Hearing damage is cumulative and irreversible, so one should err on the side of caution.
9. Use care when handling endmills, both to avoid being cut, and to avoid damaging them. Handling them with suitable gloves, or using a cloth to avoid contaminating them is recommended. Inspect them carefully before each use and ensure that they are securely held by the collet.
10. Never leave the machine running unattended/unsupervised.
11. Always inform someone before operating the machine and check in with them after successfully completing work.

Workspace:

The workspace needs to provide enough space around the Onefinity CNC for the machine to work comfortably and to be able to fully use its traveling paths. Additionally, a safe distance to possibly nearby positioned machines is to be maintained. The location of the machine as well as the workplace surrounding the machine has to be sufficiently illuminated.

As with all machinery, there are certain hazards involved with the operation and use of your machine. Using it with caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result. If you have any questions relating to the installation and operation, do not use the equipment until you have contacted your supplying distributor.

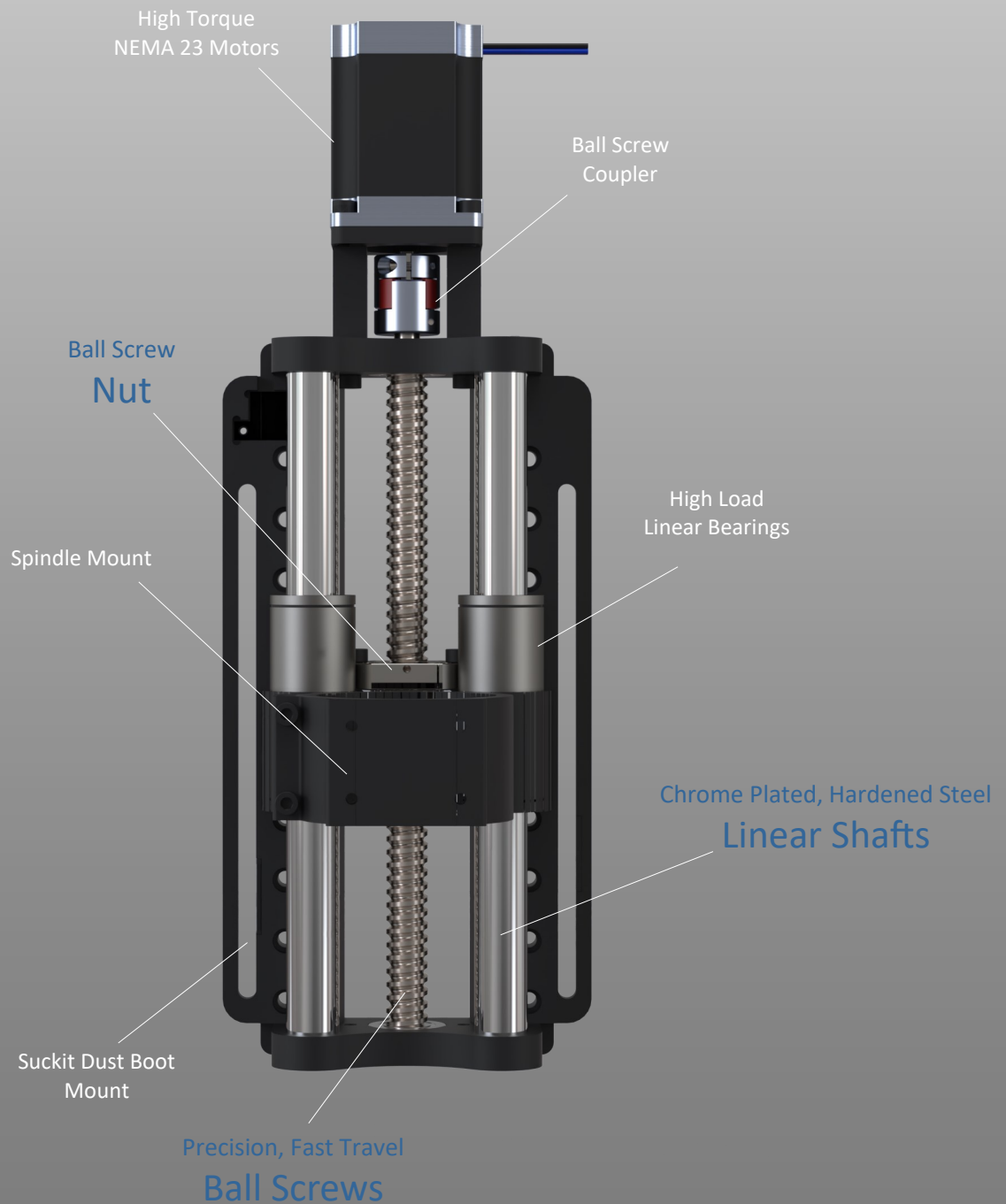
The Onefinity is a multifunctional CNC gantry milling system for the permanent and regular processing of wood, plastics and non-ferrous metals.

Thanks to the innovative design, how and where you carve is limitless! Feel like carving an intricate inlay into your dining table, no problem? Have a small shop where space is limited, Onefinity has been design to be quickly dismantled and stored!

With Fast Travel Precision Ball Screws, gone are the stretchy belts and high maintenance Lead Screws found on similarly priced machines. Hardened Steel Hollow Linear Motion Shafts means no more plastic wheels that require frequent adjustment and a powerful CNC controller with built in CAM software and HD Touch Display allows for operation without a computer!

The machine has three axes which are offset by 90°. This way, it is possible to travel to any point within the working space. Each axis is equipped with up to two stepper motors and stall homing. The stepper motors drive the movable axes elements via precision ball screws. The position of the axis is determined during the reference run (homing cycles), at the beginning of the job, with the aid of the stall homing. The machine table may consist of any solid flat surface big enough to mount the Rails and Controller. The Onefinity consists of the following, sometimes optional, components: - Onefinity Journeyman, Woodworker or Machinist; - electronic control unit in a separate aluminum housing, Z-Slider, Wire harness and Hardware.

Anatomy of the Z-20 Heavy Duty Slider



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Specifications and Features

Rapid Rate:

300 inches/min (accel 750 km/min²)

Cutting distance:

6 - 1/4 inches

Dimensions (see diagram):

A: 9 - 5/8 inches

B: 3- 1/8 inches

C: 7/8 inches

Specifications:

16mm Ball Screws

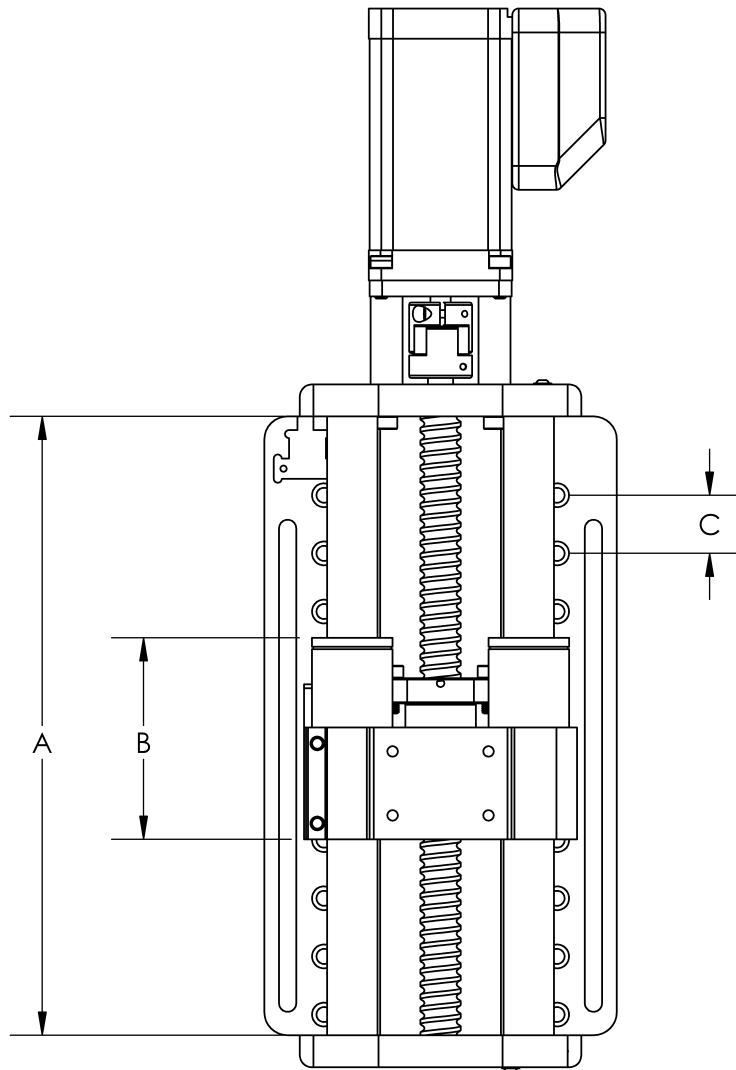
20mm Chrome plated, hardened steel linear shafts

Motor 3 - New Settings:

Max-Velocity = 7

Travel per rev = 10

Min-soft-limit = -163



Z-20 Heavy Duty Z-Slider Installation Instructions

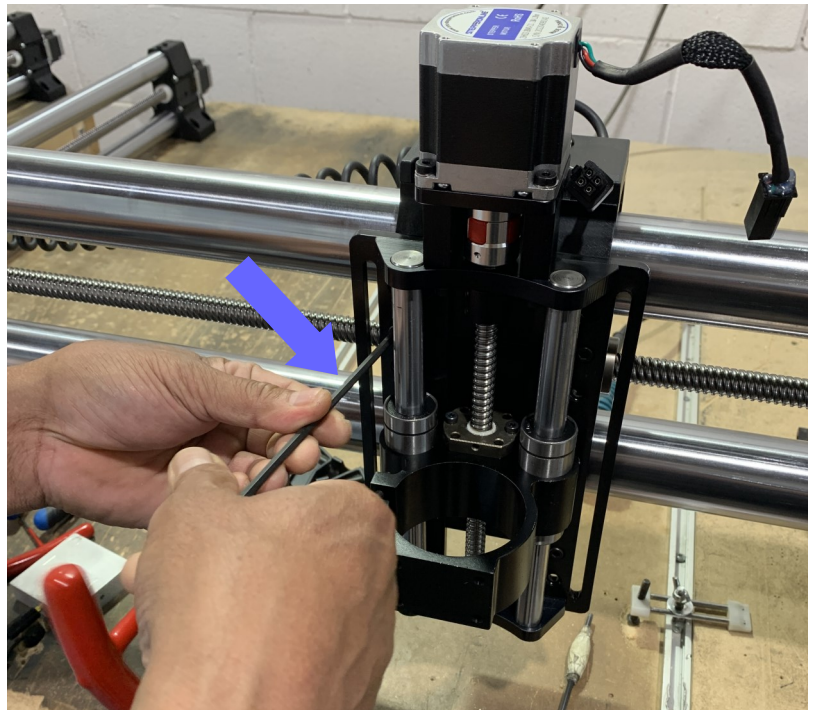
The following instructions detail how to assemble the Z-20 Heavy Duty Slider onto the X-50 Rail Assembly. The Manual can be found on our website at: www.onefinitycnc.com/support

Please read these entire instructions carefully. If you have any problems or do not understand these instructions please contact us at: support@onefinitycnc.com for further assistance. For step-by-step instructional and how-to videos please visit our YouTube page at: <https://www.youtube.com/onefinitycnc>.

Note: It is highly recommended that you view all of our assembly videos prior to attempting to assemble your Onefinity machine & accessories.

Step 1: Start by disconnecting the Z-motor cable connector. Once the motor is disconnected, use a quality 3mm Allen Key to remove the 4 screws securing the Z-slider.

Important: Be careful not to strip the screw heads.

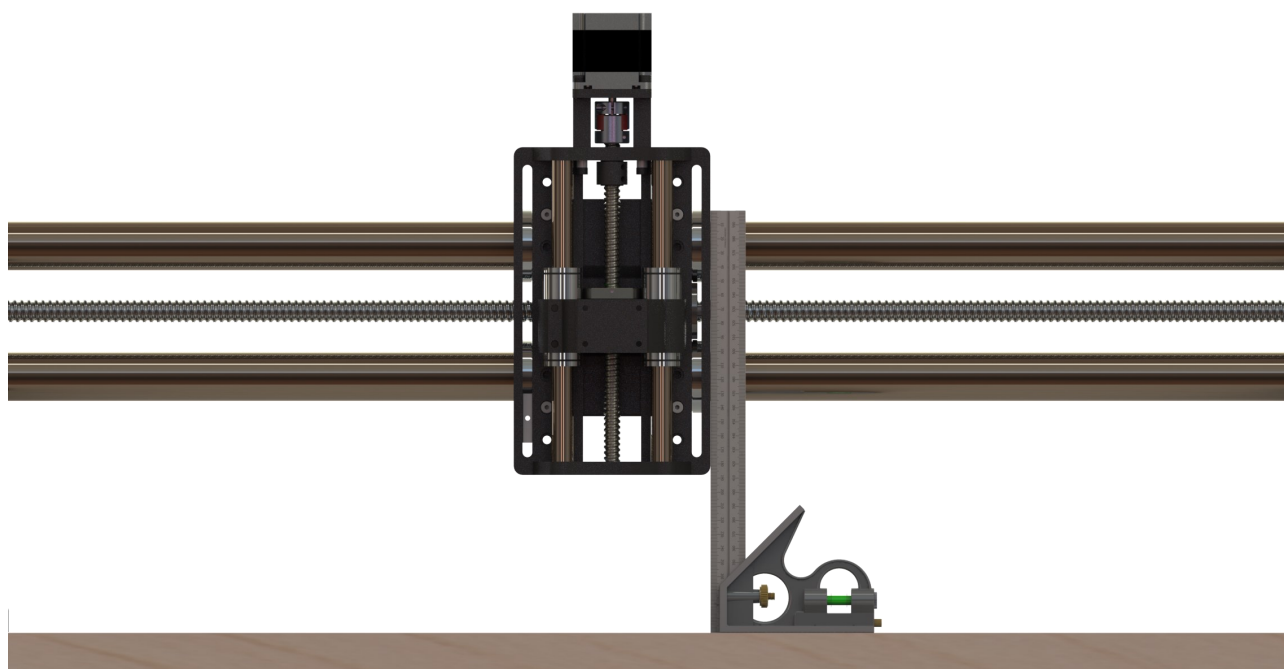


Z-20 Heavy Duty Z-Slider Installation Instructions

Step 2: With the old Z-16 Z-Slider now removed, Position the new Z-20 slider onto the gantry block and secure using the 4 longer screws supplied. Do not tighten them all the way just yet, you'll do that in the next step. **Note:** To gain access to the mounting holes you may need to manually turn the ball screw to raise and/or lower the spindle mount.



Step 3: Square the Z-Slider to your table then tighten the Z-Slider Mounting Screws. Next, plug the Z-Sliders stepper motor into the Curly Cable. **Congratulations, you have finished installed your new Z-20 Heavy Duty Z-Slider!**



Adjusting The Settings

The Z-20 Heavy Duty Z-Slider is designed to provide more speed, torque and travel distance. To ensure your new Z-20 works as intended, the machine setting will need to be adjusted. To adjust the setting please follow the steps below:

Step 1: Click on the fly-out menu button (Red Arrow)

Step 2. Click on Motor 3 (Green Arrow)

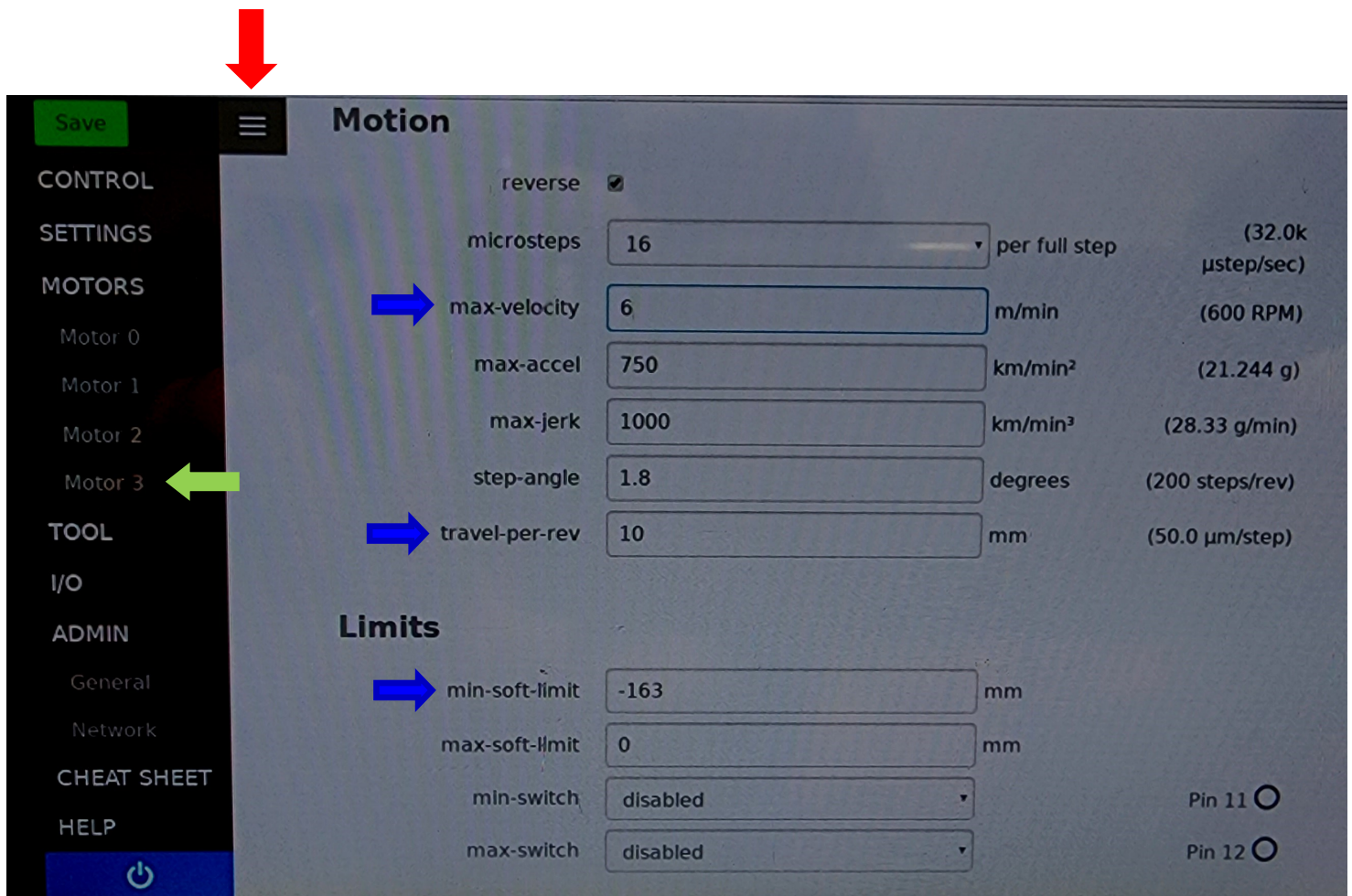
Step 3. Adjust the setting (Blue Arrows) to match the below values

Max-Velocity = 7

Travel per rev = 10

Min-soft-limit = -163

Step 4: Click save to save the setting



Using Suckit Arm Spacers

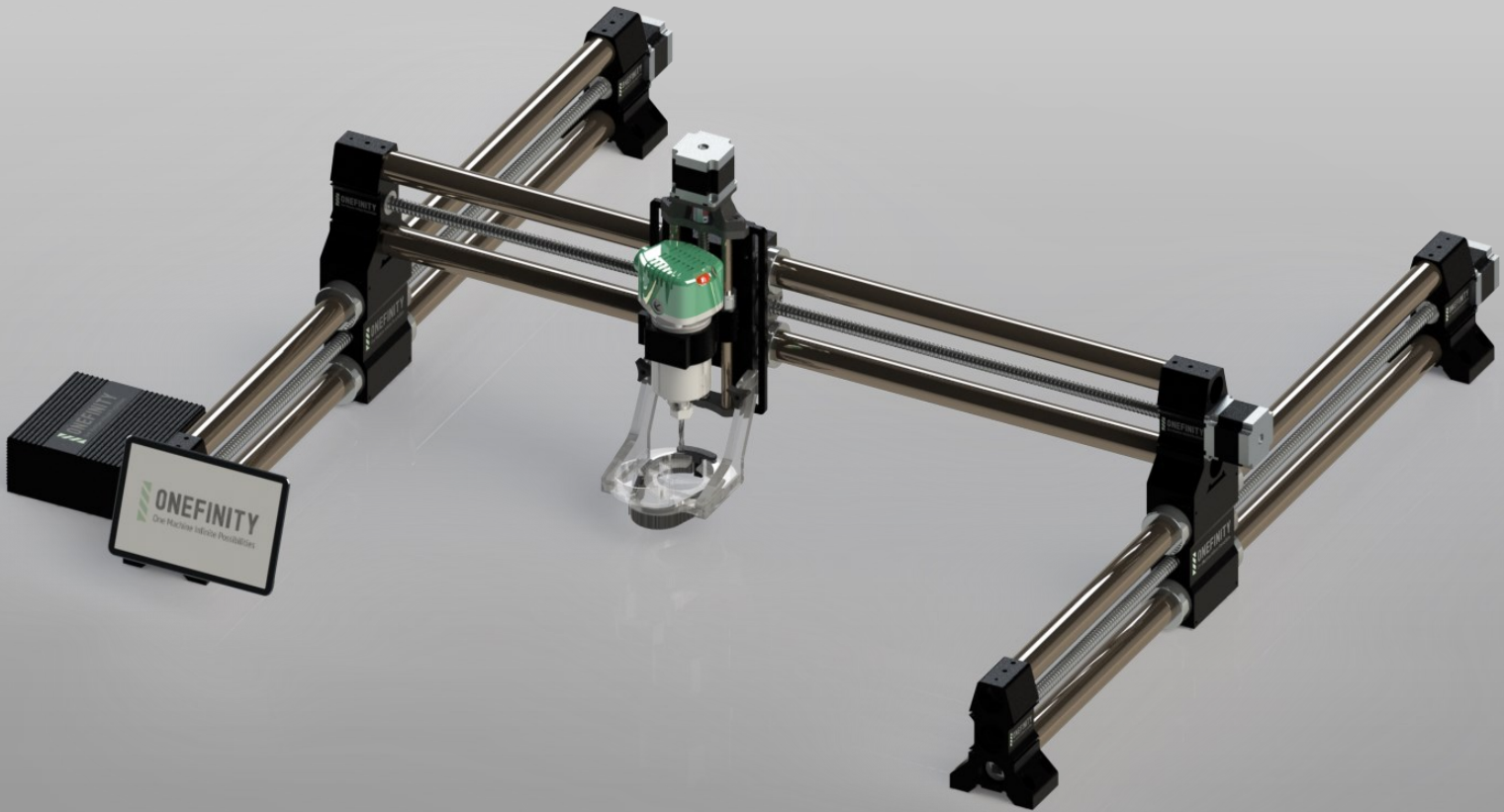
Because the Z-20 Heavy Duty Z-Slider protrudes approximately 3/4" further than the existing Z-Slider, spacers are required to use the Suckit Dust Boot.

Step 1: Insert the longer supplied Thumb Screw through the Suckit Arm and Arm Spacer and secure to the Z-20 using the Height Adjusting Lock



Step 2: Repeat the previous step to install the other mounting bracket.





ONEFINITY 12-MONTH LIMITED WARRANTY

PLEASE SEE REVERSE SIDE FOR DETAILS

IMPORTANT! SAVE THE ORIGINAL SHIPPING MATERIALS FOR WARRANTY REPAIR

Onefinity warrants this product to be free from defects in workmanship and materials, under normal use and conditions, for a period of one year (12 months) from the original shipping date. Shipping and handling fees are to be paid for by the customer. Onefinity agrees, at its option during the warranty period, to repair any defect in material or workmanship or to furnish a repaired or refurbished product of equal value in exchange without charge (except for a fee for shipping, handling, packing, return postage, and insurance which will be incurred by the customer). Such repair or replacement is subject to verification of the defect or malfunction and proof of purchase as confirmed by showing the model number on original dated sales receipt.

WARRANTY LIMITATIONS This warranty does not include:

- * Any condition resulting from other than ordinary residential wear or any use for which the product was not intended, such as use in rental or contract trade or commercial use
- * Any condition resulting from incorrect or inadequate maintenance or care
- * Damage resulting from misuse, abuse, negligence, accidents or shipping damage
- * Dissatisfaction due to buyer's remorse
- * Normal wear and tear
- * Damages incurred during transportation
- * Damages incurred during assembly or maintenance
- * Damage that is determined to be from repairs made or attempted by anyone other than qualified technicians

Without limiting the generality of the foregoing, this warranty will be void and no warranty coverage will be provided if you do any of the following: install any firmware in the machine which is not specifically issued or authorized by Onefinity; make any change or modification to the electronics or computer components of the machine; attach any peripherals or accessories to the electronics or computer components of the machine which have not been specifically issued or authorized by Onefinity; use or attempt to use the machine and/or its electronics or computer components to control or move any device or object which is not specifically issued or authorized by Onefinity.

To obtain warranty service, first email Onefinity at support@onefinitycnc.com and include your order number, contact info along with a brief explanation of the issue you are having. Once your email is received a Onefinity team member will contact you by telephone to conduct a warranty diagnosis. You may be required to provide pictures and/or video of the claimed defect. If Onefinity determines that your machine qualifies for warranty repair, then, at Onefinity's option, Onefinity will either ship to you a replacement part for you to install or require you to return the machine to Onefinity for warranty service. Onefinity also may require you to return the machine if Onefinity cannot determine from the warranty diagnosis whether your machine qualifies for warranty repair. In this case, you also must provide a credit card to cover shipping charges in the event your machine does not qualify for warranty repair. Your card will not be charged if your machine does qualify for warranty repair. If return of your machine is required, Onefinity will provide you with a prepaid shipping label and accept responsibility for damage during shipping only if you package the returned machine exactly as it was shipped to you using all of the original shipping materials. If you no longer have the original materials then you are solely responsible for the cost of shipping the machine to Onefinity. If you do not package the machine exactly as it was shipped to you using the original materials, then you will be solely responsible for any damage during shipping. For all valid warranty repairs, Onefinity will pay for return shipping to you. If your machine does not qualify for warranty repair, then the credit card you provided will be charged the cost of shipping to and from Onefinity.

ACCEPTANCE OF THE EXCLUSIVE REPAIR AND REPLACEMENT REMEDIES DESCRIBED HEREIN IS A CONDITION OF THE CONTRACT FOR THE PURCHASE OF EVERY ONEFINITY CNC MACHINE. IF YOU DO NOT AGREE TO THIS CONDITION, YOU SHOULD NOT PURCHASE THE PRODUCT. IN NO EVENT SHALL ONEFINITY BE LIABLE FOR ANY INCIDENTAL, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, OR FOR ANY COSTS, ATTORNEY FEES, EXPENSES, LOSSES OR DELAYS ALLEGED TO BE AS A CONSEQUENCE OF ANY DAMAGE TO, FAILURE OF, OR DEFECT IN ANY PRODUCT INCLUDING, BUT NOT LIMITED TO, ANY CLAIMS FOR LOSS OF PROFITS. SOME STATES AND PROVINCES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES, WRITTEN OR ORAL. TO THE EXTENT PERMITTED BY LAW, ONEFINITY DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE; TO THE EXTENT SUCH DISCLAIMER IS NOT PERMITTED BY LAW, SUCH IMPLIED WARRANTIES ARE LIMITED TO THE DURATION OF THE APPLICABLE EXPRESS WARRANTY AS DESCRIBED ABOVE. SOME STATES AND PROVINCES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU, THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE AND PROVINCE TO PROVINCE.



General Disclaimer:

While Onefinity has made every effort at the time of publication to ensure the accuracy of the information provided herein, product specifications, configurations, system/component/options availability are all subject to change without notice. Product design specifications and colours are subject to change without notice and may vary from those shown. Errors and omissions excepted. Images displayed are for illustration purposes only. The images are intended to help illustrate the product and its functions and are not indicative of actual relative differences.

www.onefinitycnc.com

Email: info@onefinitycnc.com or Call: 1 888 717 4242

Detailed assembly and how-to videos can be found on our YouTube Page:

www.youtube.com/onefinitycnc



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