



All-U-Need

ROCK/MINERAL MODEL



INSTRUCTION MANUAL

SAFETY INSTRUCTIONS



IMPORTANT! READ FIRST



For your own safety be sure to read, understand and follow all warnings, safety rules and instructions in this instruction manual before using this machine. Failure to do so can result in serious personal injury. This instruction manual is intended for the following machine models: 20-020, 20-021, 20-023, 20-024, 21-001, 21-002, 21-003 and 21-005.

SAVE THESE INSTRUCTIONS

⚠ WARNING: This machine includes a product that can expose you to chemicals including nickel, which is known to the State of California to cause cancer.

For more information, go to www.P65Warnings.ca.gov.

This warning applies to the 180# diamond lap.

SETUP

- **Intended for indoor use only.**
- **Avoid dangerous environments.** Do not use this machine near gasoline or other flammable liquids.
- **Make sure machine is securely placed on a sturdy, level surface with ample working area and away from open electrical outlets.**
- **Check for damaged parts.** Before use of this machine, always check for any damaged parts to determine that it will operate properly and perform its intended function. Check for proper alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A part that is damaged must be properly replaced through the manufacturer of this machine to avoid risk of injury.

- **Use only identical All-U-Need parts for replacement parts.** Use of any other parts not originally intended for the All-U-Need may create a hazard or cause product damage.
- **Use only recommended accessories.** The use of improper accessories on this machine may cause risk of injury.
- **Know your power tool.** Read this instruction manual carefully. Learn the correct applications and limitations as well as specific warnings and hazards related to this machine.

USAGE

- **Always wear proper apparel.** Do not wear any loose clothing, gloves, neckties or jewelry that can get caught in the machine's moving parts. Long hair must be secured with a rubber band or hair tie.

SAFETY INSTRUCTIONS

- **Always wear proper eye protection** to protect you from any debris that may fly out while grinding. We recommend wearing safety goggles or safety glasses with side shields. Everyday glasses are not safety glasses. If anyone is around the machine while it is in use, they must wear safety glasses.
- **Keep work area well lit and clean.** Make sure your work area is not cluttered.
- **Do not operate unattended.** Adult supervision is required at all times. Never leave the machine running unattended.
- **Do not operate this machine while under the influence of drugs, alcohol or any medication.**
- **Never run discs dry.** Make sure there is adequate water used while grinding so that rock dust is not formed. This dust contains chemicals that can be hazardous to your lungs if inhaled and is known to cause cancer, birth defects or other reproductive harm. To reduce your exposure to these chemicals, work in a well ventilated area and wear a face or dust mask if the grinding operation is dusty.
- **Use only water as a coolant.**
- **Never grind more than one workpiece at a time.**
- **Some rocks contain poisonous elements.** Avoid grinding rocks that contain uranium, mercury, lead, arsenic, etc. Make sure you know the material you are grinding.
- **Do not allow water to run down the shaft and into the motor.** This will cause the motor to instantly burn out. This machine is designed in such a way that this does not occur with normal use.
- **Do not allow the water level to build up in the catch tray.** Make sure the drainage hole is open so water does not back-up in the catch tray and possibly leak down the motor shaft.
- **Do not force the tool** or attachment to do a job it is not designed to do.
- **Discs continue to spin after turn off,** eventually slowing to a stop.
- **Avoid awkward operations and hand positions.** Make sure you have good balance while working on this machine. A sudden slip could cause your hand to move into the disc.

MAINTENANCE

- **Always disconnect from power before servicing.** Disconnect machine from power source before making any adjustments and when not in use.
- **Do not abuse the power cord.** Never carry the machine by the cord or yank it to disconnect from receptacle. Keep cord away from heat, oil and sharp edges.
- **Do not open the black cone body.** There are no user serviceable parts inside.
- **Clean and dry machine after use.**

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REGISTER YOUR PRODUCT

Scan the QR code below to register your product. Registering your Hi-Tech Diamond All-U-Need is essential to facilitate any warranty related requests. You can also register your machine at hitechdiamond.com/register or over the phone with us at (630) 596-9909.



ONE-YEAR LIMITED WARRANTY

This All-U-Need is warranted by the manufacturer to be free from defect for the period of one full year from the date of purchase.

What does this warranty cover?

This warranty covers all structural and electrical parts of the Hi-Tech Diamond All-U-Need such as the motor, rectifier, speed controller, etc.

What does this warranty not cover?

This warranty does not cover any consumable goods such as saw blades, diamond abrasives and/or polishing products. This warranty also does not cover any abuse, misuse, intentional damage, incorrect usage, failure to adequately take care of the machine, improperly following the instructions, servicing by someone other than Hi-Tech Diamond personnel, theft or loss and/or any act of nature.

Who is covered under this warranty?

This warranty only covers the original purchaser of the equipment. It is non-transferable.

What is the warranty period?

This warranty service is in force for one full year from the date of your purchase. **Please retain the original invoice of your machine for proof of warranty or register your All-U-Need.**

Need our warranty service?

Contact us directly by phone at (630) 596-9909 or by email at sales@hitechdiamond.com and we will assist you. **You must prove that you are under warranty by providing us with the original invoice of your machine or by registering your All-U-Need to receive our warranty service.**



Extended warranty program

You've made a smart investment by purchasing this Hi-Tech Diamond All-U-Need so protect it by extending this manufacturer's warranty another 1-2 years! For purchase, visit hitechdiamond.com or call (630) 596-9909. *Important note: You have up to 45 days from the purchase date of this Hi-Tech Diamond machine to add this extended warranty.*

MACHINE DETAILS

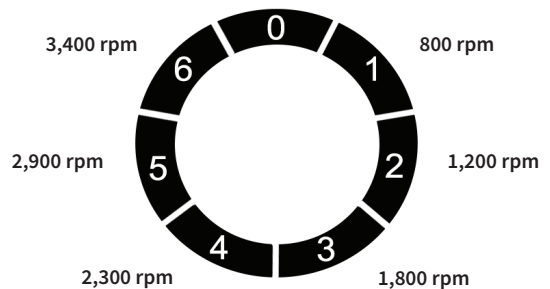
The image below shows parts and accessories included with your All-U-Need machine:

1. Water cup with black water tube and valve
2. Silver arbor with black knob and washer
3. Black spray shield
4. All-U-Need base unit (1/4 hp variable speed motor)
5. Clear drain tube
6. Water cup with cup holder
7. 3/32" Allen wrench (included with instruction manual)
8. 180# diamond lap with backing plate
9. Acrylic backing plates (4)
10. 325# brown smoothing disc
11. 600# red smoothing disc
12. 1,200# blue smoothing disc
13. Tech-11 polishing pad with 14,000# diamond paste syringe



SPEED CHART

The motor installed in the All-U-Need is variable speed, delivering speeds of 800 rpm - 3,400 rpm. Use this speed chart as a guide so you can work at the speed you desire. These values are approximate. Actual speeds may vary.



OPERATING INSTRUCTIONS

1 Carefully unpack the All-U-Need from the box and remove all loose foam and accessories. Set the packaging aside should you need it in the future. Check to make sure all parts are present on both the machine and in the accessory kit. **If you find any missing or damaged parts, call us immediately at 1 (630) 596-9909 or email us at sales@hitechdiamond.com.**

2 Place the All-U-Need on a table or surface that is flat in a well lit location. Make sure the machine sits level and the white catch tray is securely mounted on a horizontal plane on the motor housing. If the tray is raised or tilted, it will hit the motor shaft or silver arbor and rub, causing a squeaking sound on the arbor.

3 Install the water system by inserting the black tube with valve into the white cup with the hole. Position this cup on top of the spray shield. Insert the clear drain tube into the drain hole on the bottom right side of the white catch tray. Position the other white cup under the drain tube. See cover image for correct set-up. Fill the top cup with clean water. Never re-use water. *Note: To install the optional cup holder or Pro-Flow water cooling system, see page 11.*

4 Included in the All-U-Need accessory kit are three colored diamond smoothing discs, one Tech-11 polishing pad and four backing plates. The smoothing discs and Tech-11 pad need to be assembled before use. To do this, remove the protective backing from the discs and apply the pressure-sensitive adhesive side to a clean, smooth surface of the backing plate. Each disc needs a backing plate. Make sure to center the pre-punched hole in the disc with the arbor hole

in the backing plate. Improper centering may cause the disc to spin out of round resulting in machine vibration. Make sure the discs have even contact with the backing plate surface.

Note: Discs may be slightly smaller than the backing plates.

5 Put the 180# diamond lap disc on the arbor and secure with the 1/4"-20 thread knurled black knob and washer (Fig. A). This is the first disc you will use to start shaping your rough material. Put on safety goggles (not included) and turn the power switch on. Adjust the water drip so that the water is aimed at the center of the disc. You only need a few drops of water to adequately lubricate the discs. You can control the splash by raising or lowering the black spray shield.

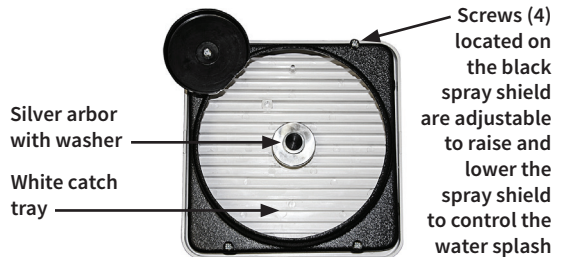


Fig. A

GRINDING AND POLISHING

STEP 1: ROUGH SHAPING

The 180# diamond lap is used for shaping rough material and removes any surface irregularities. This allows your work piece to be smoothed and polished. Never use discs dry and use only clean water as a lubricant. Do not use wipers or sponges, as they may become contaminated with cutting debris and larger diamond particles, causing scratches in your work piece. Grind the edges of stones and glass to fit your desired mounting or template. Remove as many flat spots as possible if you are making a domed cabochon. If a sharp edge is present on your work piece, gently apply the sharp edge to the diamond disc to prevent possible chipping.



180# diamond lap

STEP 2: SMOOTHING

The 325# brown diamond smoothing disc is used next to further refine your desired shape. It also removes scratches and flat spots left from the 180# rough grinding process. It is important to remove all of the scratches from step 1 because these scratches are difficult, sometimes impossible, to remove later in the smoothing and polishing process. Rinse the black spray shield with clean water before proceeding to step 3.



325# brown smoothing disc

STEP 3: SMOOTHING

The 600# red diamond smoothing disc is used next to further smooth and refine your work piece before proceeding to the next step. It is not as aggressive as the last disc and aids in removing the remaining scratches and flat spots. Remove any scratches left from step 2.

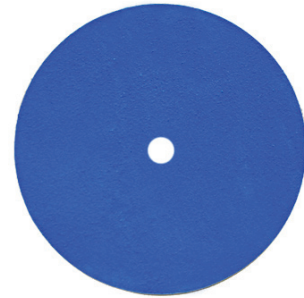


600# red smoothing disc

GRINDING AND POLISHING

STEP 4: PRE-POLISH

The 1,200# blue diamond smoothing disc is used next. Once you've completed shaping your stone with the previous steps, use this disc to remove any scratches left from step 3. This disc is a pre-polish pad, which preps your stone for the final polish.



1,200# blue smoothing disc

STEP 5: POLISH

The Tech-11 polishing pad is used to put the final polish on your material. You will need to charge the Tech-11 polishing pad with the 14,000# diamond paste before use. To do this, take the diamond paste syringe, remove the cap and squeeze the syringe plunger in a series of small dots onto the surface of the Tech-11 pad (Fig. B). Use your fingers to rub these small dots into the pad. Once charged, you will only need to apply additional diamond paste to the pad when you notice that the pad is no longer polishing. Using the Tech-11 polishing pad with water is not required because the diamond compound mixture contains its own carriers. However, if you are working with brittle, heat sensitive material, such as opal, be careful not to let your work piece overheat. To avoid overheating, use a very small amount of clean water to keep your work piece cool or simply lower the RPM to reduce heat buildup. *Note: Use only one type of polishing compound per Tech-11 polishing pad. Do not mix different polishing compounds on the same pad.*



**Tech-11 polishing pad with
14,000# diamond paste syringe**

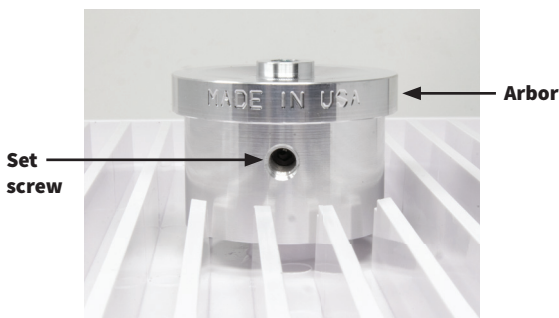


Fig. B

MAINTENANCE

OILING

The only part you need to oil on the All-U-Need machine is the inside of the 2" silver arbor. This is required because the motor shaft and arbor are made of different materials. Over time, they can seize together, making it impossible to remove the arbor. Every two months or so, remove the arbor by inserting the included Allen wrench into the set screw, turning counter-clockwise. Turn the arbor upside down. Apply a few drops of motor oil, way oil, lithium or water pump grease into the area where the arbor fits onto the shaft. Make sure there is no excess oil so that oil doesn't drip down the motor shaft and get into the motor. This will cause an instant motor burn-out. When putting the arbor back onto the shaft, make sure the screw is positioned against the flat side of the motor shaft. If the screw is positioned against the rounded side of the shaft, it will make a squeaking noise and create friction, causing the motor shaft to get hot. Once the arbor is positioned properly, check the set screw for tightness on the arbor using the Allen wrench. Do not over tighten the set screw, as you will need to remove it regularly to clean the tray. The arbor may be adjusted up and down if necessary to keep the spinning disc below the black spray shield.



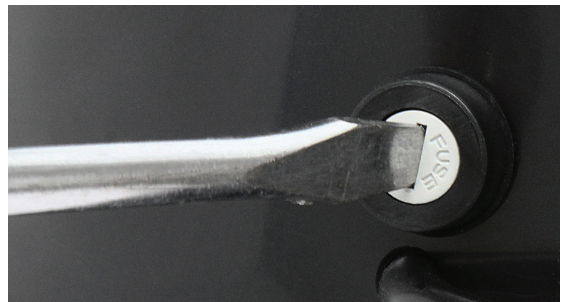
CLEANING

The All-U-Need is designed to be easily disassembled for cleaning. After each use, rinse the black splash guard and flush out the white catch tray with clean water so the rock sediment can get washed down the drain tube. Any used water must not be disposed down a sink, as it can harden like cement, closing off the drain. Allow the machine to dry completely then store it in a safe place, away from children.

Note: When you are finished using the diamond lap disc and diamond smoothing discs, rinse and spin completely dry. Store them in a clean, dry plastic bag until next use. The maximum weight of any discs/laps should not exceed 1.5lbs on your All-U-Need machine.

FUSE DETAILS

The fuse is installed in the back of the All-U-Need machine. It is a 250V, 4AMP slo-blo cartridge fuse. If you need a replacement, this fuse can be found at your local hardware store. See below for how to change the fuse.



Push in with a flat head screwdriver, then turn to the left (counter-clockwise)

COOLING SYSTEM

INSTALLING THE PRO-FLOW ATTACHMENT

This feature is not available on all models.

1 Attach your Pro-Flow water cooling system to any side of the All-U-Need white catch tray. Tighten the thumbscrews to fasten.

2 Connect the Pro-Flow clear tubing to the water pump or pressure tank. Connect the $\frac{5}{8}$ " diameter clear tubing to the drain spout of the catch tray and place the other end in a bucket (not included) to collect the runoff water.

3 Adjust your desired water flow using the control valve.

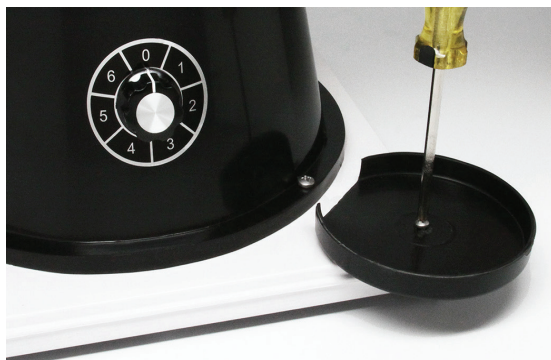


INSTALLING THE CUP HOLDER

1 The black cup holder is found in your water kit bag, take it out.

2 Using a screwdriver, unscrew the screw that is located in the front right corner in the All-U-Need base.

3 Center the hole in the black cup holder with the hole in the base and screw the black cup holder into the All-U-Need base.



Note: Do not over-tighten the screw or the screw may strip the hole. If this happens, the screw will not be able to tighten. Only tighten the screw so there is a snug fit.

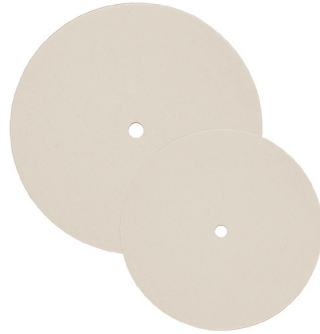
ACCESSORIES

For more Hi-Tech Diamond products and accessories, visit hitechdiamond.com.



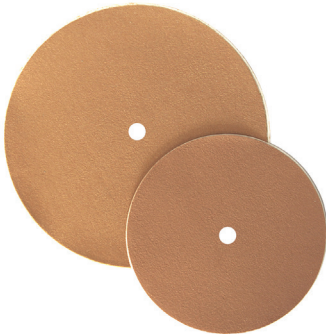
Backing plates

Our 6" and 8" acrylic backing plates provide a flat surface to back diamond smoothing discs, diamond lap discs and polishing pads. They are 3/8" thick and have 1/2" arbor holes.



Tech-11 polishing pads

Our 6" and 8" Tech-11 polishing pads serve as a general polishing pad to polish stone and glass. Use with cerium oxide, tin oxide or diamond compound.



Final polish pads

Our 6" and 8" final polishing pads are specially designed to put a mirror polish on stone and glass. They are pre-charged with cerium oxide so you don't need to mess with slurry or diamond paste.



Sponge pads

Our 6" and 8" sponge pads are used under diamond smoothing discs and polishing pads to provide a cushion that helps facilitate doming into cabochons and removes flat spots. They are 1/8" thick and ideal for making cabochons.

ACCESSORIES

For more Hi-Tech Diamond products and accessories, visit hitechdiamond.com.



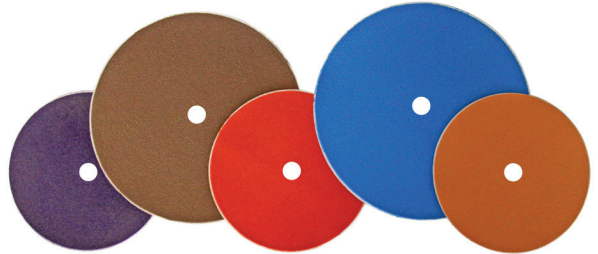
Diamond lap discs

Our 6" and 8" diamond lap discs are used for precise rough and fine grinding on stones and glass. They are nickel electroplated, using top grade diamond powder. Discs are available as 1mm thick, top plates with adhesive backings or come prebound to acrylic backing plates. Select from the following grits: 60#, 80#, 100#, 180#, 260#, 360#, 600#, 1,200# and 3,000#.



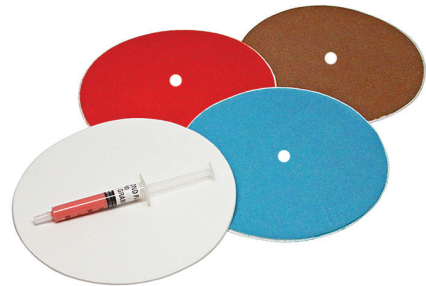
Glass grinding bits

Our glass grinding bits are used for shaping edges of glass pieces and creating grooves in stained glass for wire wrapping. Bits with 3/8" arbor holes conveniently fit onto the motor shaft of the All-U-Need, transforming this flat lap into a power-horse glass grinder. Select from the following grits: 60#, 80#, 100#, 220#, 360# and 600#.



Diamond smoothing discs

Our 6" and 8" diamond smoothing discs are used for smoothing, refining and polishing gemstones, glass, synthetic material and metal. Discs are available in the following grits: 220#, 325#, 600#, 1,200# and 3,000#.



Diamond smoothing disc kits

Our 6" and 8" diamond smoothing disc kits are great for replacing all of the items in the All-U-Need and Slant Cabber accessory kit. Kits are available with or without backing plates and include the following: 325# disc, 600# disc, 1,200# disc, Tech-11 polishing pad and 14,000# diamond paste syringe.

FAQS

What lubricants should I use with the All-U-Need?

We recommend using only clean water with the All-U-Need. If desired, you may add a water soluble coolant to the water.

Can I reuse water for diamond grinding?

You can, but we don't recommend this. When you reuse water, you risk getting contamination on your diamond discs which increases the chances of unwanted scratches on your work pieces. For best results, use clean water every time you use the All-U-Need.

How do I clean the white catch tray?

To prevent the drain tube from clogging, flush the white catch tray after every use on the All-U-Need by taking a small bucket of clean water and pouring the water into the catch tray so the leftover rock sediment gets flushed down the drain tube. Once you see all of the sediment gone and the white catch tray is clean, your All-U-Need will be ready for the next use. If you need to remove the white catch tray for further cleaning, do so by removing the arbor with the Allen wrench that is included with the All-U-Need instruction manual.

Can I reuse backing plates that are backed to used, old smoothing discs, polishing pads and diamond lap discs?

Yes. Purchasing new backing plates for new smoothing discs, polishing pads and diamond laps is not required, if you can properly remove them from the backing plate. To remove diamond smoothing discs and polishing pads from backing

plates, simply heat the surface of the diamond smoothing disc using a heat source from a hair dryer or heat gun. This takes approximately 2-3 minutes. Peel off the disc from the backing plate. If there is residual glue stuck on the backing plate, take a razor blade and scrape it off. To remove diamond lap discs, which are the electroplated diamond discs, use the same heat process as above and use a screwdriver to prop off the disc from the backing plate. *Note: If for some reason you can't remove all of the residual glue from the backing plate, we recommend purchasing a new backing plate. If the surface on the backing plate is not fully clean or smooth, this may cause new discs, pads or laps to not stick properly or lay flat on the backing plate surface, causing unwanted bumps and grooves on your work pieces.*

Do you sell electrical spare parts for my All-U-Need? Whom do I contact if I need a repair or replacement for my All-U-Need?

Due to the technical nature of our machines, we do not offer electrical spare parts for you to install yourself such as motors, speed controllers, rectifiers, etc. Instead, we offer a repair service that is done in-house by our qualified technicians. For more information about our repair service, visit hitechdiamond.com/repairs.

TROUBLESHOOTING

My machine is vibrating...

The motor that is installed in the All-U-Need is variable speed, meaning you can adjust the speed in-between the range of 800 rpm - 3,400 rpm. When the All-U-Need is run at slower speeds, you may experience a vibration. We recommend running the All-U-Need at higher speeds to prevent this vibration. If you are still experiencing a vibration after running the All-U-Need at high rpms, check to see if your discs are properly centered. If the diamond lap disc, diamond smoothing discs or polishing pads are not accurately centered with the 1/2" arbor hole in the backing plate, this will cause a vibration.

My motor is beginning to rust, why is this?

The only possible way the motor can rust is if there is water getting into the motor. Water should never get into the motor with the correct water set up so if you are seeing rust, make sure your water set up doesn't allow water to drip into the motor.

What should I do if the drain tube keeps clogging with sediment?

If the drain tube keeps clogging with leftover rock sediment, simply flush out the sediment with lots of clean water until the sediment gets flushed down the drain tube. If a large piece of sediment is clogged and stuck in the drain tube, use an air spray gun to blow it out.

My All-U-Need is making a loud, squeaking noise. Why is this?

If your All-U-Need is making a loud, squeaking noise, it can be one of the following scenarios:

- 1) The inside of the silver arbor hasn't been oiled in a while. Make sure you are oiling the inside of the arbor according to the oiling instructions on page 10.
- 2) The white catch tray is raised or tilted, thus hitting the motor shaft or arbor and causing them to rub against each other. Make sure your All-U-Need sits on a flat, level surface.
- 3) The arbor isn't properly tightened onto the motor shaft. Make sure the arbor is secured using the included Allen wrench.

I can't remove the arbor from the motor shaft.

If you can't remove the arbor from the motor shaft using the Allen wrench, it is most likely because the arbor and motor shaft seized together. This is a result from not oiling the inside of the arbor according to the oiling instructions on page 10. If it is impossible to remove, please contact Hi-Tech Diamond at 1 (630) 596-9909 and one of our specialized technicians will help you over the phone for correct removal.



MANUFACTURED BY

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