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Teflone Publications MMV
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Cag Speed III Sharpener Manual



Operating Instructions

Before operating this unit, please read this manual thoroughly, and retain it for future use.

Owners Record

The serial number is located on the rear of the machine besides the main power switch. Record this number in the space provided below and refer to it when calling your Cag dealer for service related issues.

Serial No. _____

Table of Contents

Page 3... Accessories included with Speed III

Page 4... Getting Started.

Page 5... Adjusting grinding wheel pressure.
Machine specifications.

Page 6... Important safety instructions.
Changing the grinding wheel.

Page 7... Setting the radius of hollow (ROH)

Page 8 and 9... Dressing the grinding wheel.

Page 10... The grinding process (Hockey Skates)

Page 11... The grinding process (Goalie Skates)

Page 12-14... The grinding process (Figure Skates)

Page 15... Front view of Speed with parts designation.

Page 16... Rear view of Speed with parts designation.

Page 17... Left casting of Speed with parts designation.

Page 18... Right casting of Speed with parts designation.

Page 19-20... Individual parts description with pictures.

Page 21-23... What to do if?... Troubleshooting guide.

Page 24... Quick checklist before sharpening.

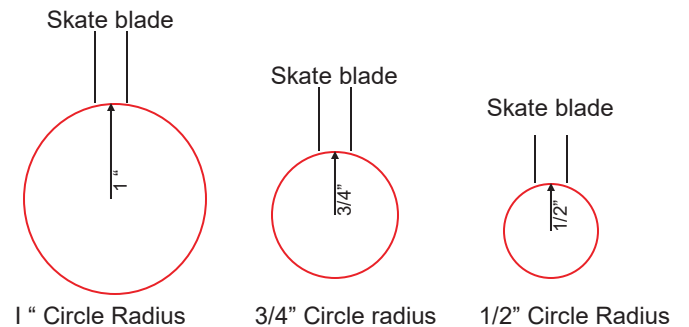
Page 25... Conversion table for ROH measurements.

Back Cover... Contact Information.

General Conversion table for various radius of hollow measurements.

	US	Decimal	Metric (mm)
Shallow ↑ ↓ Deep	1"	1	25.4
	15/16"	0.9375	23.8125
	7/8"	0.875	22.225
	13/16"	0.8125	20.6375
	3/4"	0.75	19.05
	11/16"	0.6875	17.4625
	5/8"	0.625	15.875
	9/16"	0.5625	14.2875
	1/2"	0.5	12.7
	7/16"	0.4375	11.1125
	3/8"	0.375	9.525
	5/16"	0.3125	7.9375
	1/4"	0.25	6.35
	3/16"	0.1875	4.7625
	1/8"	0.125	3.175

Below is an example of three different sized radius's that we may use to dress the grinding wheel before sharpening. Note that the largest radius (circle) creates a flatter or shallower hollow between the two edges. As the circle radius becomes smaller the radius between the two edges becomes deeper.



After changing grinding wheel always adjust wheel pressure.

Quick Checklist Before Sharpening.

- ☑ Check to be sure that the skate holder is positioned all the way to the far left of the machine. If the skate holder is not pushed all the way over then the start button and return arrow LED lights will flash and subsequently prevent the machine from starting.
- ☑ Check for and remove rust on bottom of skate blade before sharpening. (use sanding block). Determine by looking at the blade edges if extra strokes may be required.
- ☑ Measure width of skate blade with tool provided and set blade width measurement dial accordingly.
- ☑ Decide which (ROH) or depth of hollow for the skates being sharpened and turn diamond clockwise or counterclockwise to the desired setting. Put metal ruler provided against the diamond to determine hollow radius.

Lightly dress the grinding wheel with dresser diamond. This process is to be done with slow strokes across the wheel. Gently turn diamond fractionally clockwise between strokes to shape *entire* wheel. To reduce vibration during this process tighten nut on diamond thread and position dresser arm locking mechanism left or right.

Shut down grinding wheel by pushing dressing button and return diamond dresser arm to the right and flip down against the machine.

Using the wheel height adjuster stick pull upwards till the desired height of the grinding wheel is reached. Be sure that you check the grinding wheel pressure.

Place (hockey) skate into holder and clamp into place. Always be sure the skate blade sits below the *entire* clamp plate before starting the sharpening process. It is also a good idea when sharpening hockey skates to tilt the toe forward slightly before clamping into holder. This allows the wheel to sharpen higher up on the toe of the skate blade.

When sharpening Figure or Goal skates be certain to follow setup instructions within this manual. It is however important to note that regardless of what skates are about to be sharpened the process of dressing the wheel is the same.

Included with the Speed III

Page 3



We stock a full line of Pro Shop accessory items and equipment. Check out our website and call us toll free for great prices and quick service.

- (a) QSP Shop Vacuum for quiet efficient dust suction.
- (b) Skate Blade Width Measurement Tool
- (c) ROH (Radius of Hollow Measurement Ruler)
- (d) Two Diamond Dressers
- (e) Servo Commander (Automatically turns vacuum on and off)
- (f) Two Honing Stones (Use to remove burrs after sharpening)
- (g) Two Skate lifters for use with goalie and figure skate setup.
- (h) Two 80 or 60 grit grinding wheels (Specially balanced wheels)
- (i) Ultra Glide liquid for use after sharpening to reduce blade friction.
- (j) Safety Glasses for use during sharpening
- (k) Main power cord (Refer to getting started page)
- (l) Computer disc Cag Sharpening tutorial. (Also available in VHS)
- (m) One Year parts and Labour warranty.

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Getting Started...

1. First make sure that you have a level sturdy surface to place your machine on after opening and a AC outlet close at hand. Save all packing materials.

2. After unpacking, place the Sharpener onto the table and gently tilt the machine onto it's back so that you may remove the transport screws with a 7mm nut driver. (Be sure to save screws for future transport)



3. Once the screws have been removed place the machine back into it's regular position. Remove the metal ruler from the skate clamp and gently push the skate clamp all the way to the left.



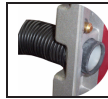
4. Plug your servo commander/relay box into an AC outlet and plug your vacuum into the servo commander.



5. Insert the other cord from your servo commander into the socket on left casting of sharpener.



6. Insert vacuum hose into the receptacle located on the left casting.



7. Insert the power cord into the back of the machine besides the main power switch and plug into an AC receptacle.



8. Pull upwards on the height adjuster stick until the grinding wheel sits approx 1.5 inch above the wheel shot guard. It is very **IMPORTANT** that a new grinding wheel is not pulled all the way up. This may cause the wheel to grind into the skate holder during operation.



9. Adjust Grinding wheel pressure before operating. Please refer to "Adjusting the Grinding Wheel Pressure" for more information.(pg.5)

10. To turn on machine you must first switch on the main power switch at the back of the machine besides the power cord input. In order to complete the process simply pull out the Emergency Power cartridge on the front bottom right of the machine.



After changing grinding wheel always adjust wheel pressure.

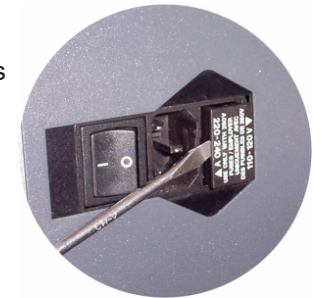
What to do if...

The skate lace has just got caught in the grinding wheel.

- Immediately press the emergency stop button on the front panel to shut down power.
- Remove lace and place inside the skate.
- Push skate holder back into start position.
- Pull emergency stop button back out to power up machine.
- It is possible that the internal breaker was activated and that you may have to wait momentarily for the machine's power to be restored.

There is no power when the machine is turned on.

- First check to be sure that both power switches are turned on. (main power switch in back of machine and emergency stop cartridge in front)
- Check the power source to the unit.
- If unit is still off then you may be required to change the main fuses on the back of the machine besides the power cord input.
- Be sure that the main power cord is unplugged from machine before starting.
- Using a small flat head screw driver pry open the fuse cover as seen in picture.
- There are two 5 amp standard glass fuses within this compartment to change.
- After replacing blown fuse or fuses insert fuse box back into machine being sure to line up the small white arrow on the fuse box with the power source you are using. (if your running a 120v power source be sure that the arrow lines up with 120v)
- Restart machine.
- If there is still no power call our Toll Free # for assistance.



The grinding wheel misses sharpening the toe of the skate

Problem : The wheel is not coming up high enough to contact the toe, or the wheel is ground down to low.

Answer :

- Check to be sure that the wheel height adjuster stick is pulled up high enough for the wheel to meet the toe of the blade.
- If the grinding wheel has been ground down to the paper label it will be too small to come up high enough to reach the toe. The wheel should be replaced.
- If there is still some difficulty grinding the toe simply position the skate in the holder with the toe tilted forward before clamping. This will lower the toe relative to the grinding wheel. Be sure however that the skate blade is completely within the skate clamp.

When dressing the wheel there appears to be a harsh grinding sound.

Problem : Diamond is worn (tip is rounded) or your dressing the wheel with too much pressure or too quickly.

Answer :

- Be sure to dress the grinding wheel very lightly so as not to wear both the wheel and diamond needlessly.
- Make sure the dresser arm locking mechanism is engaged.
- Tighten nut on diamond shaft down against Dresser arm to prevent vibration during dressing of the wheel.
- Replace the worn diamond with a new one and re-dress grinding wheel if problem still exists.
- If the grinding wheel is dressed too quickly the shaping of the wheel will not be smooth. (Always dress the wheel in very slow passes for consistent results.)

Adjusting the Grinding wheel Pressure...

You will find the grinding wheel pressure adjuster on the right casting of the machine. Above the adjuster disk you will notice a + and a - symbol. To increase pressure of the grinding wheel push the disk towards the + symbol (away from you) and to decrease pressure pull the disk towards the - symbol (towards you).



The pressure, when the Speed Sharpener is delivered is set so the grinding wheel reaches the top with the least amount of pressure. The wheel should always come up fully to the set height of the wheel height adjuster. If there is not enough pressure, the wheel will simply not travel up high enough to sharpen the full length of the blade. If there is too much pressure you will hear a drop in the RPM of the wheel when grinding the blade which may also trigger the 5 amp fuse on the left casting (Speed II machine only) to pop out and shut down the grinding motor. If this happens simply make sure the skate clamp is positioned back into the left position and push the fuse back in. Once this is done turn down the grinding wheel pressure and restart the sharpening process. The Speed III machine incorporates an internal breaker which will reset itself automatically after about 30 seconds. This built-in safety system prevents the user from overheating and potentially burning the skate blade.

A simple check of the grinding wheel pressure can be made by lightly (when power is off) pushing down on the wheel (about a 1/2 inch) and seeing if it bounces back 2 or 3 times without pushing the height adjuster stick upwards.

As the grinding wheel diminishes in size you may have to increase the wheel pressure so that it reaches the top of the height adjuster stick setting. When the wheel is ground down to the paper label it is time to change the wheel. Remember to lower the wheel pressure after installing a new grinding wheel and also to lower the height adjuster stick to the appropriate level. Typically the wheel should be no higher than a 1 1/2" above the shot guard.

Specifications:

- > Weight: 55 lbs - 25 kg / Length: 28.5" - 720 mm / Height: 8" - 220 mm / Depth: 10.5" - 260 mm
- > Power: 110 V - 60 Hz / 300 W - 3A
- > Manufactured in Canada / Patent Pending

***Use only "Spirale" balanced grinding wheels.**

Safety First...

- It is strongly recommended that you wear both safety glasses and mask filter before sharpening.
- Tuck skate laces and any loose items into skate boot before operating machine.
- Do not place any objects on top of the machine.
- Do not operate machine in damp areas.
- Do not allow anyone other than a trained operator to use this machine.
- Emergency stop is located on the front bottom right of machine. Push in when you need to shut down power quickly.
- Always be sure that your vacuum is operating properly and change filters regularly.
- Turn Power off before changing grinding wheel
- Do not attempt to sharpen any other item other than a skate blade on this machine.
- Do not use any grinding wheel that appears to be chipped or damaged.
- Internal machine service should *only* be provided by a certified Cag technician to retain warranty and prevent serious injury.



Changing the Grinding Wheel

- Change grinding wheel when worn down to paper label.
- Turn off machine
- Push height adjuster stick all the way down
- Press shot guard release button on left casting and remove
- Hold grinding wheel with one hand while turning plastic wheel lock counter clockwise until removed.
- Gently pull wheel of spindle and replace with new one.
- Put plastic wheel lock back on spindle and turn clockwise until snug against the wheel.
- Replace shot guard and adjust wheel height with the adjuster stick.
- Adjust grinding wheel pressure as per instructions (page 5).



After changing grinding wheel always adjust wheel pressure.

What to do if...

The grinding wheel shuts down during operation.

Problem : Wheel pressure is set to high.

Answer :

- Press return arrow until the skate holder goes back to the start position.
- Reduce grinding wheel pressure by turning the wheel pressure adjuster on the right casting towards you..
- Once the you have lowered the pressure be sure that the wheel is still able to come up all the way to the set level of the height adjuster stick.
- Wait about 30 seconds for the internal breaker to reset itself and then start up again.

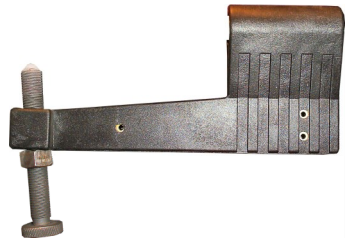
If you have the Speed II machine you will need to press in the breaker fuse on the left casting before starting machine again.

Grinding wheel bounces when first hitting the toe of skate

Problem : Grinding Wheel height level is set to high or the grinding wheel pressure is set to low.

Answer :

- Using the wheel height adjuster stick lower the wheel
- You can quickly test if the wheel height is ok for the skate in the clamp by simply pushing the skate clamp to the right until the toe of the skate touches the wheel.
- The toe of the skate should touch the upper section of the wheel closest to the top so as not to bounce when contact is made.
- If the grinding wheel pressure is set to low simply push the grinding wheel pressure adjuster away from you (+) until the wheel travels as far up as you set the height of the adjuster stick.



Dresser arm with diamond dresser



Grinding wheel height adjuster.



5 amp breaker fuse on Speed II only. Speed III has internal breaker fuse



Main power switch Power cord input Main fuse box.



Start button on left casting

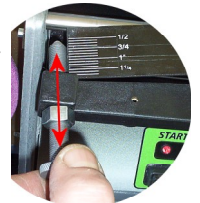


Shot guard release button.

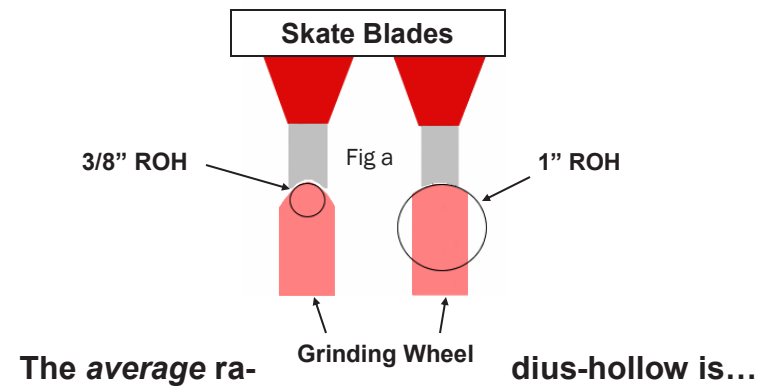
*Use only "Spirale" balanced grinding wheels.

SETTING THE RADIUS OF HOLLOW (ROH)

The desired radius for the hollow-grind is set by turning the dresser diamond clockwise to adjust for a deeper hollow or counter clockwise for a shallower hollow (or less sharp). The ruler on the sharpener expresses the radius of the hollow in millimetres or inch's. To check if the correct radius has been set, place the ruler along side the diamond and check the depth setting.



*NOTE: THE DEPTH OF HOLLOW BETWEEN BOTH EDGES IS DETERMINED BY THE RADIUS OF A CIRCLE. THE SMALLER THE CIRCLE THE DEEPER THE HOLLOW BETWEEN BOTH EDGES. PLEASE REFER TO FIGURE (a).



- 1/2" - for Hockey skates
- 3/4"-1" for Figure skates
- 1"-1 1/4" for Goalie skates.

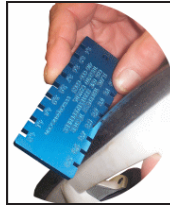
Note: Hollows may vary to suit players needs.

Deeper hollows create thinner and more fragile edge's.

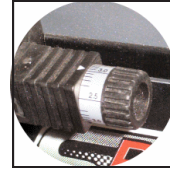
Dressing the Grinding Wheel

Page 8

In order to dress or shape the grinding wheel you must first measure the width of the skate blade using either a calliper or the measuring tool provided. The average blade width is 2.9 mm for hockey, 3.2 – 3.9 mm for figure and 4 mm for goalie.



Once this measurement is made we set the blade width dial located on the right side of the dresser arm's base to the width of the blade. If for instance the blade width is 2.9mm we turn the dial so that this setting is lined up with the arrow on the left side of the dial.



Your next step is to dress the grinding wheel.

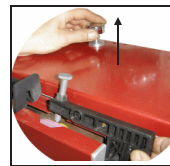
For this process we must first lower the grinding wheel fully by pushing downward on the height adjuster stick on the top of the machine.



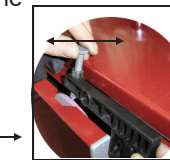
Flip the *Dresser Arm* upwards against the machine and then by holding the **elbow area only** push all the way along the bar to the far left or until dresser arm touches the casting.



Once the dresser arm is pushed fully to the left slowly bring the height adjuster stick upwards until the grinding wheel is very lightly touching the dresser diamond. Be sure that the dresser diamond is positioned over the centre of the grinding wheel.



With one hand holding the elbow of the dresser arm and the other lightly placed on the diamond dresser head (be sure not to push down on the diamond at any time) gently bring the dresser diamond back and forth once over top the grinding wheel. The diamond should only barely touch the highest point of the grinding wheel. If there is no contact from the diamond to the wheel simply turn the diamond clockwise fractionally until there is a very light touch. If the diamond is touching too hard on the wheel simply turn the diamond counter-clockwise until there is only a **light** touch.



After changing grinding wheel always adjust wheel pressure.

Page 19



Dresser arm locking mechanism



Start button and skate return button.



Grinding wheel pressure adjuster



Single and 4 cycle buttons

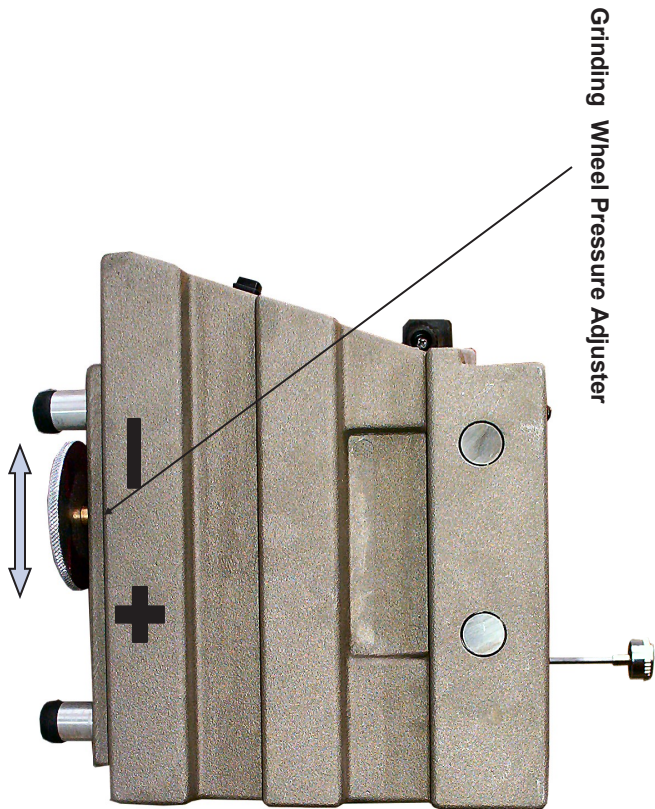


Blade width measurement dial



Regular or slow speed modes.
Note: Machine is calibrated to always finish last pass on slow speed.

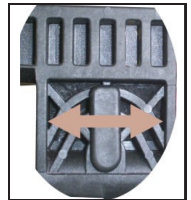
Keep a **clean** work environment...Change vacuum bags regularly!



Right Casting

Continued from page 8...

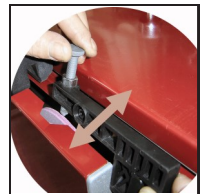
Once you have set the height of the grinding wheel to the tip of the diamond be sure that the dresser arm is pushed to the back of the machine so that the diamond is not overtop the grinding wheel. Push the dresser arm locking mechanism either to the left or right to reduce vibration during the dressing process



You will now press the dressing button located on the bottom right of the machine. The grinding wheel and vacuum should now be automatically turned on.



With both hands (one on the elbow of the dresser and one overtop the diamond dresser) gently pull and push the diamond back and forth over top the grinding wheel. The motion of going back and forth over the wheel must be done slowly and smoothly to optimally shape the grinding wheel. I typically can count 4 or 5 seconds for each forward and back stroke over the wheel. Make sure the entire wheel has been dressed by fractionally turning the diamond clockwise between each stroke so that you feel the diamond lightly grinding the wheel and also see the sparks on the wheel where the diamond is contacting. This process shapes the wheel into a convex shape so that when sharpening creates a concave between the two edges.



Once you have shaped the entire wheel from front to back return the dresser arm to the back of the machine and press the dressing button to shut down the grinding wheel motor.



It is recommended that you periodically lubricate the sliding bar to which the dresser arm is attached to reduce friction

When the grinding wheel has stopped you then turn the dresser diamond counter clockwise about one full rotation and position the diamond tip over the centre of the wheel. At this point be sure to return the dresser locking mechanism back to it's center position. You then pull the elbow of the dresser arm back all the way to the right along the bar and fold the dresser arm down against the machine.



***Use only "Spirale" balanced grinding wheels.**

THE GRINDING PROCESS

Hockey Skates...

Be sure to dress grinding wheel first before following the instructions below! (See " Operation")

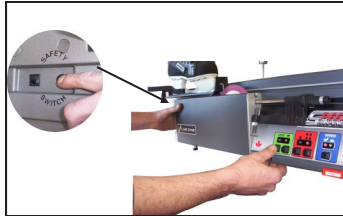
Before engaging the Sharpener, the skate holder must be positioned fully to the left. Press the return arrow button or push the skate holder manually over to start position.

Place the ice skate into the holder (toe forward) and clamp it. If the skate has very little blade at the toe you may lean the skate slightly forward before clamping it to ensure the toe is low enough to touch the grinding wheel. Be sure that if you tilt the skate blade forward that you make sure the back portion of the blade is sitting below the skate clamp.



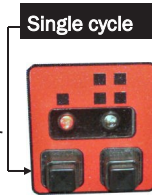
*** Be sure that you have a skate in the holder and place dresser diamond down against the machine before starting the grinding process.**

Start the grinding process by pressing the **two** start buttons simultaneously. One is located on the left side casting of the sharpener marked **Safety Switch** and the second button is located on the front keyboard marked **Start**.

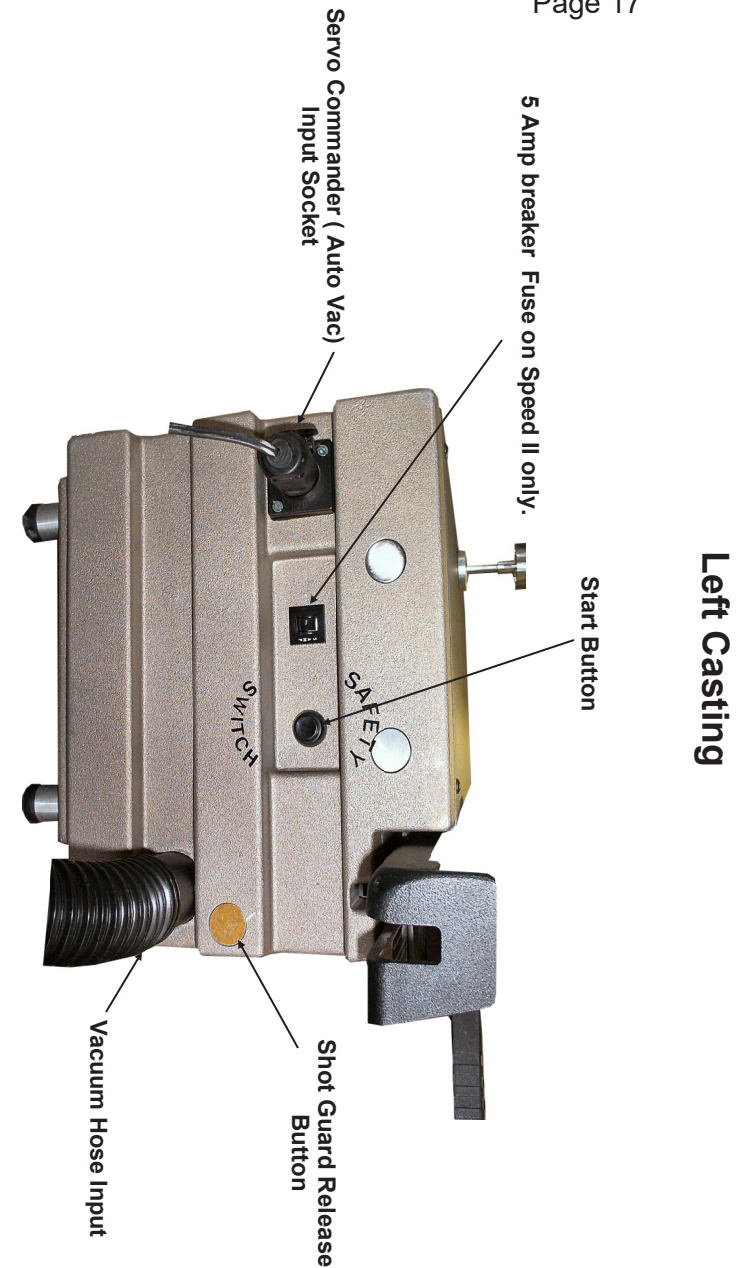


The machine will stop automatically after completion of 8 passes over the grinding wheel (4 cycles). The final return pass over the wheel will be at about half the regular speed ensuring a smooth finishing stroke on the blade.

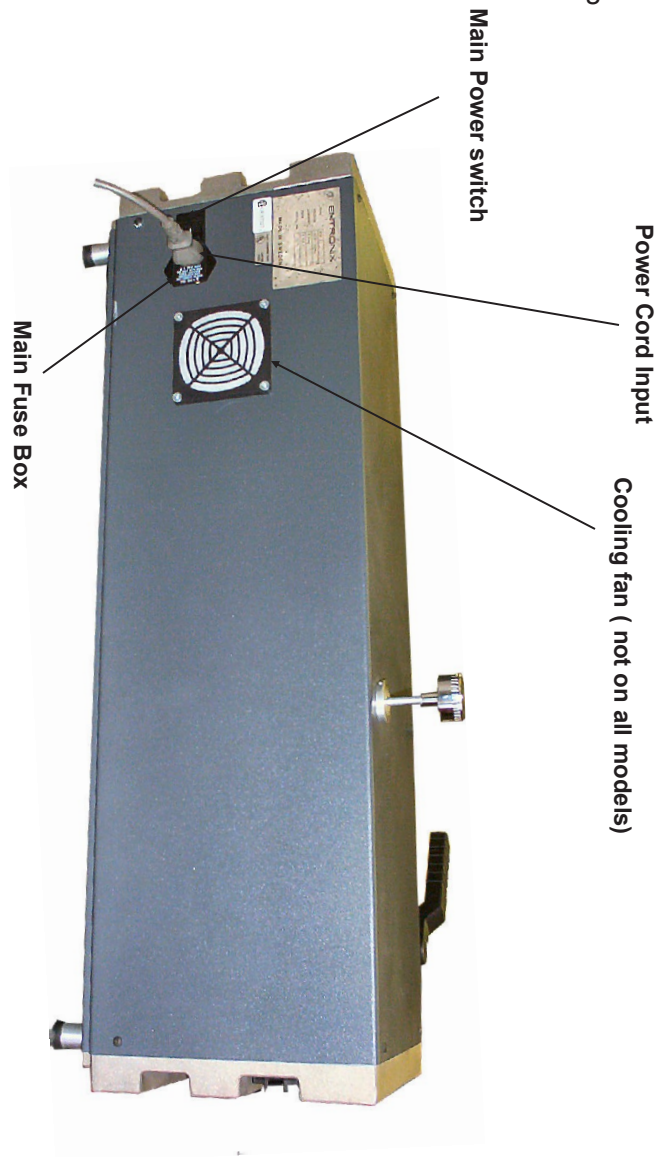
If the blades you are sharpening are in particularly bad shape you may press the single cycle mode after finishing the regular 4 cycle mode and start the machine again. Even in the **single cycle** mode the final back stroke will always be at the slow speed (the LED light will automatically switch from the rabbit to the turtle mode).



*** Always hone edges after sharpening with a proper honing stone. (Very Important!)**



After changing grinding wheel always adjust wheel pressure.



Rear View

*Use only "Spirale" balanced grinding wheels.

Goalie Skates...

Be sure to dress grinding wheel first before following the instructions below! (See " Operation")

Sharpening goalie skates is not very different from sharpening regular skates. You still must measure the width of the blade and set the dial on the dressing arm accordingly. Most goal skate average about a 4mm thickness. Generally speaking most goalies will want a smaller hollow or flatter radius than a player (average 1" hollow). If the goaltender does not know which radius to use this may be a good starting point.

Dress the grinding wheel as normal then return the dressing arm back to its original position and raise the wheel up using the height adjuster stick. It is **very important** at this time to place both lifters under the skate clamp before inserting the goal skate.



You then place the goal skate into the clamp so that it is resting on the lifters. Tighten the clamp and **remove the lifters before sharpening**. If after sharpening you still notice some nicks on the blade edges place back in the clamp and set up for just a single cycle to clean it up . When a skate is in very poor condition another full 4 cycle mode should be initiated. Before placing the skate back in the clamp again be sure to insert lifters again and remove them once the skate clamp has been tightened up.



Adjust the wheel height adjuster stick so that the grinding wheel is only sitting up as high as needed to sharpen the goal skate from toe to heel. If the grinding wheel is set up to high then the wheel may jump slightly after hitting the toe of the blade. This may cause a slight ripple finish on the first 1/2 inch of the blade. If you would like to check where the blade will touch the wheel simply pull the skate holder to the right with the skate in and see where the toe of the skate blade touches the grinding wheel.(be sure the grinding wheel is not turned on). Make a wheel height adjustment if necessary and move the skate back to starting position. You may then press both start buttons and begin sharpening.

*Use only "Spirale" balanced grinding wheels.

Figure Skates

Be sure to dress grinding wheel first before following the instructions below! (See " Operation")

Be sure to turn machine off during setup for Figure Skates.

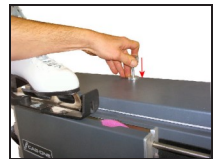
There are a couple of setup differences when it comes to sharpening Figure skates. The first thing we must do before inserting the blade into the skate holder is to insert the skate lifters between the skate holder and the shot guard. Position the left lifter parallel with the left casting of the machine as in the picture. Position the right lifter **approx 2 inches** forward of the centre of the skate holder.



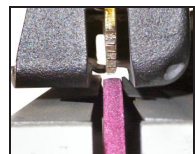
Place the figure skate into the skate holder but do not tighten clamp at this point. Be sure that the figure skate blade is sitting on top of the lifters. Position the right lifter approx 2 inches behind the first blade pick. Now clamp the blade in place and **remove** both lifters.



Lower the grinding wheel all the way using the wheel height adjuster stick. Push the skate holder to the right until the first toe pick is directly over the center of the grinding wheel. Slowly bring the grinding wheel upward with the height adjuster stick until the wheel is as close to touching the pick as possible without actually touching it.



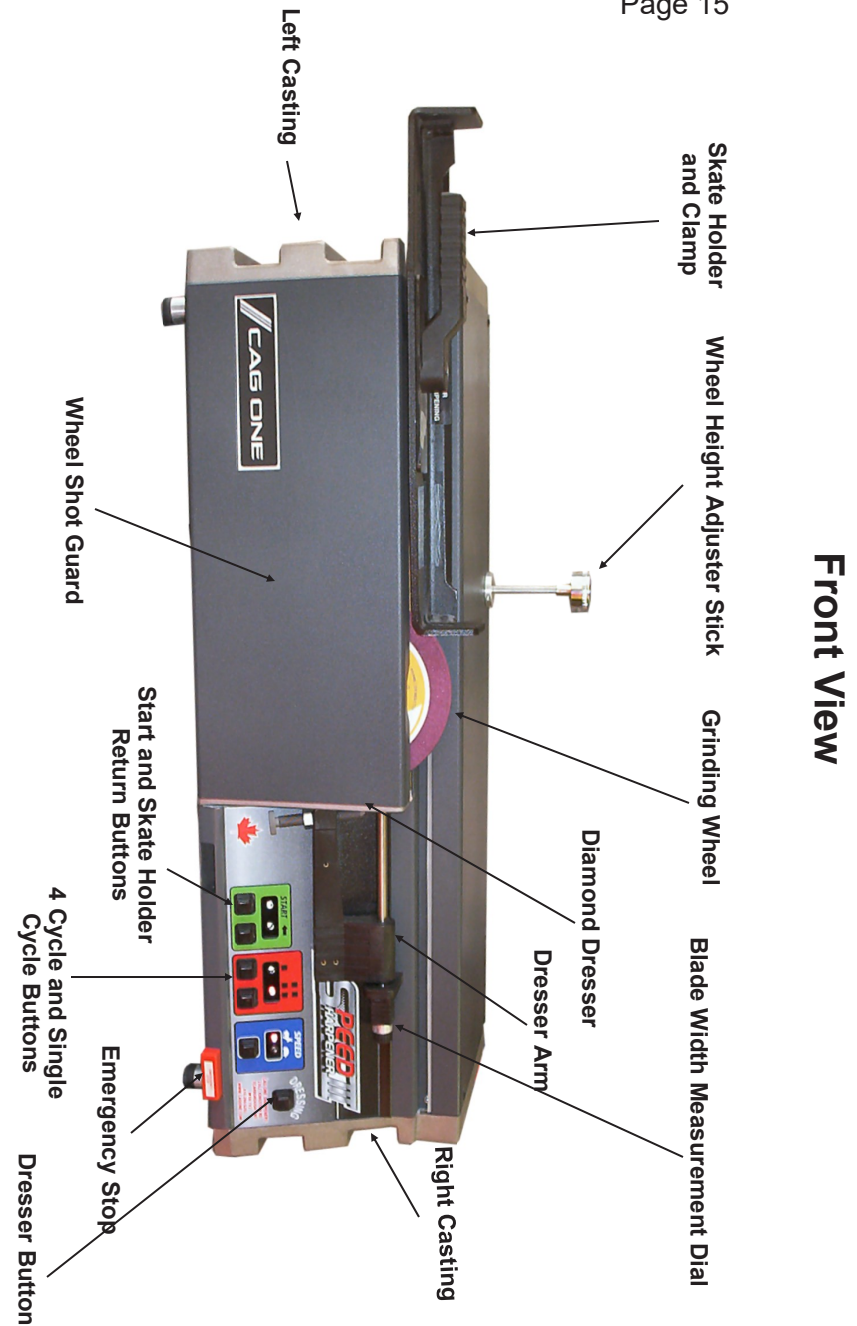
You then slowly move the skate holder further to the right and observe where the grinding wheel touches the skate blade. The wheel should touch the blade no further than 1" to 1 1/2" behind the picks. Continue moving the blade over the entire length of the wheel to be sure that the wheel is positioned high enough to grind the entire length of blade. Once this is completed and everything is ok slowly move the skate holder all the way to the left side of the machine and power up and start. You may also move holder to the left by simply pushing the return arrow button on the front panel.



Always be sure that the skate holder has come to a complete stop before removing skate. (continued on page 13)



***Use only "Spirale" balanced grinding wheels.**



Continued...

Return the skate to start position and press both start buttons. After your 4 cycles are completed it may be necessary to also do some extra passes. depending on the condition of the blades.

My advice is to do the extra cycles so that your certain when the blade is removed from the holder it will not have to be put back on with all the setup that comes with it. Remember to check before sharpening just how dull or nicked up the blade may be so as to get a general idea as to how many extra passes are required after the initial four cycles. It has certainly been my experience that most (although not all) figure skates coming into my establishment require more work due to poor blade quality and and/or lack of care.



Once the skate has finished it's passes and has come to a complete stop place the lifters back under the blade **before** unclamping the skate. Now unclamp the skate and remove skate. Place the second skate onto the lifters and clamp snugly. Remove the lifters and check that the blade is positioned properly so that the grinding wheel misses the front pick and does not hit to high up on the heel of the blade. Chances are that if you place the second skate onto the lifters in the same position as the first skate you will not have to adjust the position of the blade. It is however recommended that you still push the skate holder to the right and check the skate blades positioning relative to the grinding wheel.

Remember ... Always practice your sharpening skills on the Speed III using old or unused skates until you are confident in your sharpening ability. Once you are satisfied with your results have yourself or a friend or co-worker test it on ice for important feedback.



If you do a good sharpening the word will go around. If you do a poor sharpening the word will go around twice as fast. Always remember this and build your sharpening reputation accordingly!

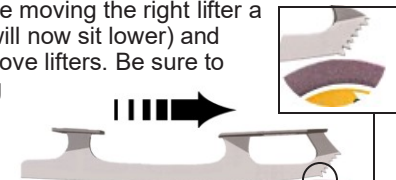
Practice...Practice...Practice

Always remove rust on bottom of skate blades before sharpening.

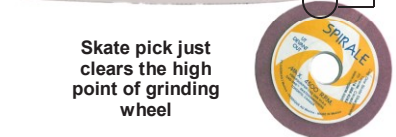
If the grinding wheel touches the figure skate blade to far back of the pick it is because during the setup the **right** lifter was placed to far to the left when the skate was placed on top of it. This will result in the toe of the skate being too far angled up. Simply bring the skate holder back to the start position and place the lifters back into the **same place** under the skate and then loosen the skate clamp.



Now hold the figure skate while moving the right lifter a little more forward (the picks will now sit lower) and clamp back into place and remove lifters. Be sure to check again before sharpening that the height of the wheel and the skate placement are proper.



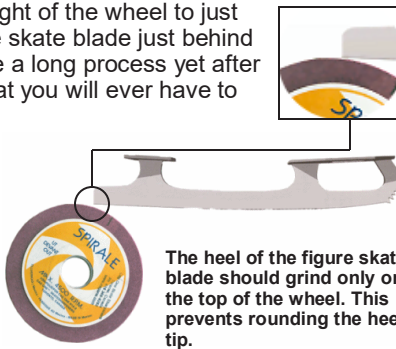
If the grinding wheel touches the entire length of the blade **except** the heel it simply means that the right lifter was placed to far forward before clamping the skate into place. Simply move the skate back into the starting position, loosen the clamp and move the right lifter further to the left. You should see the toe of the skate coming upwards slightly. At this point clamp the skate firmly into place, remove the lifters and re-check that the grinding wheel is touching properly along the entire length of the blade.



Once again you adjust the height of the wheel to just miss the first pick yet touch the skate blade just behind the picks. This may seem to be a long process yet after a few practice runs it is rare that you will ever have to reposition the lifters because of improper placement.



Slowly push the skate holder all the way to the right and be sure that the wheel touches the entire blade including the heel. For optimum sharpening of figure skates it is important that the heel of the blade is not rounded by the grinding wheel that hits to high up on the blade. (Continued...Pg14)



The heel of the figure skate blade should grind only on the top of the wheel. This prevents rounding the heel tip.