

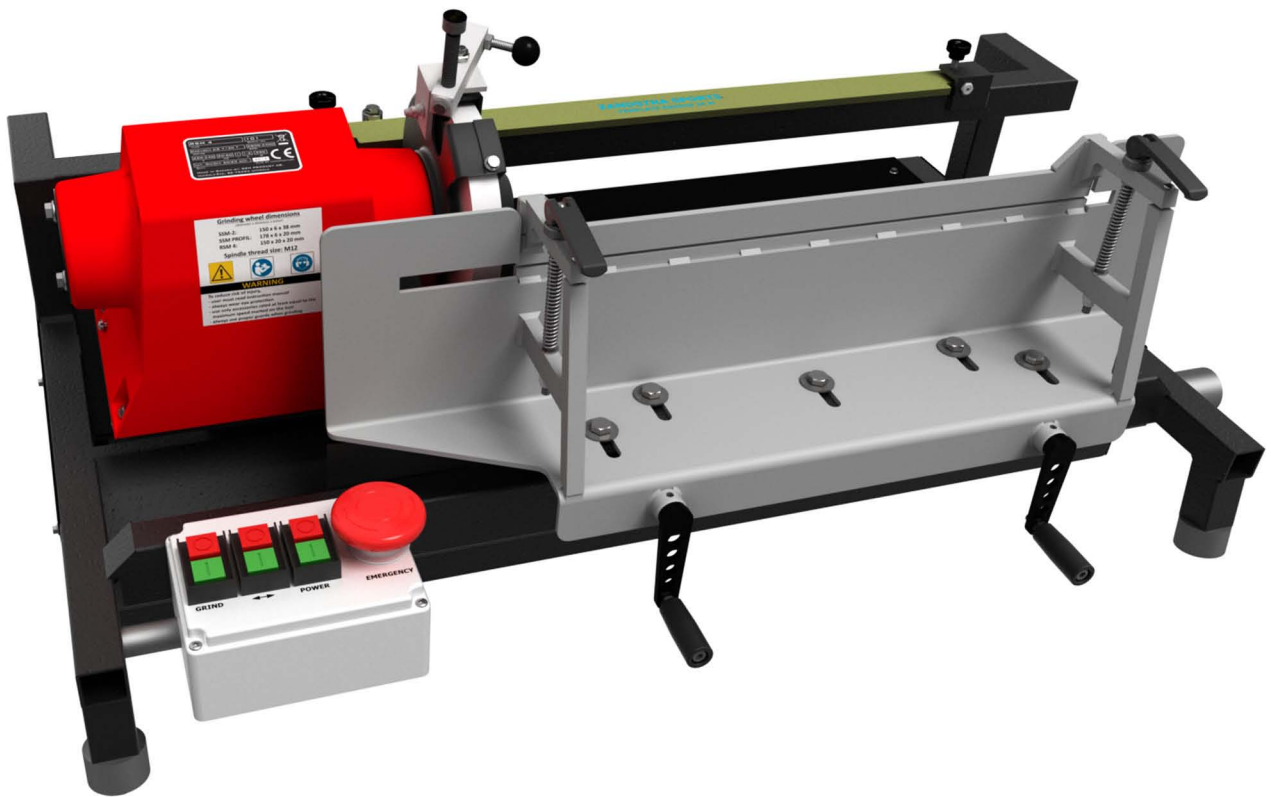
# RSM 4

## INSTRUCTION MANUAL



### WARNING!

TO REDUCE THE RISK OF INJURY, USER MUST READ AND UNDERSTAND THIS INSTRUCTION MANUAL.



### ORIGINAL INSTRUCTIONS

Date of purchase: .....



# RSM 4 Skate Radius Sharpening Machine

***Congratulations on your purchase of a RSM 4 skate radius sharpening machine.  
We sincerely thank you for selecting a product from SSM Produkt AB.***

***To obtain an additional copy of this manual, please contact SSM at:***



**SSM PRODUKT AB**

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## LIMITED WARRANTY



### Scope of warranty

This warranty covers any defects in materials and workmanship under normal use.

### Period of coverage

This warranty runs for two (2) years from the date of purchase. Please save your receipt or invoice.

### Limitations

Failures due to abuse, misuse or an event or effect that cannot be reasonably anticipated or controlled (such as flood, earthquake, act of God etc.) are not covered by this warranty. Surface coating problems caused by excessive humidity, in-use scratches or abrasions, and direct exposure to the elements are also not covered.

*Repair or replacement is the only option available under this warranty. SSM Produkt AB (SSM) is not responsible for damages of any kind, including incidental and consequential damages.*

Incidental damages include but are not limited to such damages as loss of time and loss of use. Consequential damages include but are not limited to the cost of repairing or replacing property that was damaged if the product from SSM does not work properly.

### Correction of details

If your product cannot be repaired, we will replace your product free of charge.

### How to get service

Please return the defective product together with the purchase receipt or the invoice. You can obtain service by contacting Zandstra Sports or SSM directly. At our discretion, Zandstra Sports or SSM will either repair or replace your product.

### How country and state laws relates to the warranty

This warranty gives you specific legal rights. You may also have other rights that vary from country to country and from state to state.

**SSM PRODUKT AB RESERVES THE RIGHT TO MAKE IMPROVEMENTS  
AND MODIFICATIONS TO DESIGN WITHOUT PRIOR NOTICE.**

**SSM PRODUKT AB  
VAKSALA-EKE, SE-75594, UPPSALA, SWEDEN**

# GENERAL SAFETY RULES



## WARNING!

When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury including the following.

Read all these instructions before attempting to operate this product and save these instructions.

### Safe Operation

*Keep your work area clear.*

- Cluttered areas and benches invite injuries.

*Consider work area environment.*

- Do not expose tools to rain.
- Do not use tools in damp or wet locations.
- Keep work area well lit.
- Do not use tools in the presence of flammable liquids or gases.

*Guard against electric shock.*

- Avoid body contact with earthed or grounded surfaces (i.e. pipes, radiators, ranges, refrigerators).

*Keep other persons away.*

- Do not let persons, especially children, not involved in the work touch the tool or the extension cord and keep them away from the work area.

*Store idle tools.*

- When not in use, tools should be stored in a dry locked-up place, out of reach of children.

*Do not force the tool.*

- It will do the job better and safer at the rate for which it was intended.

*Use the right tool.*

- Do not force small tools to do the job of a heavy duty tool.
- Do not use tools for purposes not intended; for example do not use circular saws to cut tree limbs or logs.

*Dress properly.*

- Do not wear loose clothing or jewelry; they can be caught in moving parts.
- Non-skid footwear is recommended when working outdoors.
- Wear protective hair covering to contain long hair.

*Use protective equipment.*

- Use safety glasses and hearing protection.
- Use face or dust mask if working operations create dust.

*Connect dust extraction equipment.*

- If the tool is provided for the connection of dust extraction and collecting equipment, ensure these are connected and properly used.

*Do not abuse the cord.*

- Never yank the cord to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.

*Secure work.*

- Where possible use clamps or a vice to hold the work. It is safer than using your hand.

*Do not overreach.*

- Keep proper footing and balance at all times.

# GENERAL SAFETY RULES (continued)

## *Maintain tools with care.*

- Keep cutting tools sharp and clean for better and safer performance.
- Follow instruction for lubricating and changing accessories.
- Inspect tool cords periodically and if damaged have them repaired by an authorized service facility.
- Inspect extension cords periodically and replace if damaged.
- Keep handles dry, clean and free from oil and grease.

## *Disconnect tools.*

- When not in use, before servicing and when changing accessories such as blades, bits and cutters, disconnect tools from the power supply.

## *Remove adjusting keys and wrenches.*

- Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.

## *Avoid unintentional starting.*

- Ensure switch is in "off" position when plugging in.

## *Use outdoor extension leads.*

- When the tool is used outdoors, use only extension cords intended for outdoor use and so marked.

## *Stay alert.*

- Watch what you are doing, use common sense and do not operate the tool when you are tired.

## *Check damaged parts.*

- Before further use of tool, it should be carefully checked to determine that it will operate properly and perform its intended function.
- Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation.
- A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated in this instruction manual.
- Have defective switches replaced by an authorized service center.
- Do not use the tool if the switch does not turn it on and off.

## *Warning.*

- The use of any accessory or attachment or performance of any operation with this tool other than those recommended in this instruction manual may present a risk of personal injury.

## *Have your tool repaired by a qualified person.*

- This electric tool complies with the relevant safety rules. Repairs should only be carried out by qualified persons using original spare parts; otherwise this may result in considerable danger to the user.

## *Noise*

- The typical A-weighted noise levels determined according to EN 61029-1:2009 :

Sound pressure level ( $L_{PA}$ ): 58 dB

Sound power level ( $L_{WA}$ ): 72 dB

Uncertainty (K): 3 dB

## EC-DECLARATION OF CONFORMITY

We, SSM PRODUKT AB, Vaksala-Eke, SE-755 94, Uppsala, Sweden declare that the product RSM 4 to which this declaration relates is in conformity with the following standards:

EN 61029:2009+A11

EN 55014-1:2006+A1:2009+A2:2011

EN 61000-3-2:2014

EN 61000-3-3:2013

EN 55014-2:1997+A1:2001+A2:2008



Uppsala, January 30, 2015  
(place, date)

Stefan Gustavsson  
(signature, name)

following the provisions of 2004/108/EC and 2006/42/EC directives.

# SPECIFIC SAFETY RULES AND SYMBOLS



**WARNING!**



**READ OPERATOR'S  
MANUAL BEFORE USING  
THE MACHINE**



**EYE AND HEARING  
PROTECTION REQUIRED**

The machine must be used only for the purpose of grinding a radius on ice speed skates.  
Always fasten the skate in the skate holder. **NEVER** hold skate being sharpened only by your hands.  
*It is important to support the work properly to get the best result possible, minimize body exposure and loss of control.*

Check grinding wheel protective cover for proper fit before using the machine to minimize the risk of flying debris.  
Keep hands and body away from the rotating grinding wheel.  
*Contact with a rotating grinding wheel or parts from an exploding grinding wheel can result in serious injury.*

Only use grinding wheels approved by Zandstra Sports BV. Use grinding wheels with correct size and shape.  
*Unauthorized grinding wheels may be dangerous!*

Keep grinding wheel securely fastened.

When fastening grinding wheel, never use damaged or incorrect flange, flange washer or nut.

*The flange and flange washer were specially designed for the machine, for optimum performance and safety of operation.*

## **Safety Warnings Specific for Grinding:**

Use only wheel types that are recommended for your power tool and the specific guard designed for the selected wheel. *Wheels for which the power tool was not designed cannot be adequately guarded and are unsafe.*

The guard must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator.

*The guard helps to protect operator from broken wheel fragments and accidental contact with wheel.*

Wheels must be used only for recommended applications. For example: do not grind with the side of cut-off wheel. *Abrasive cut-off wheels are intended for peripheral grinding, side forces applied to these wheels may cause them to shatter.*

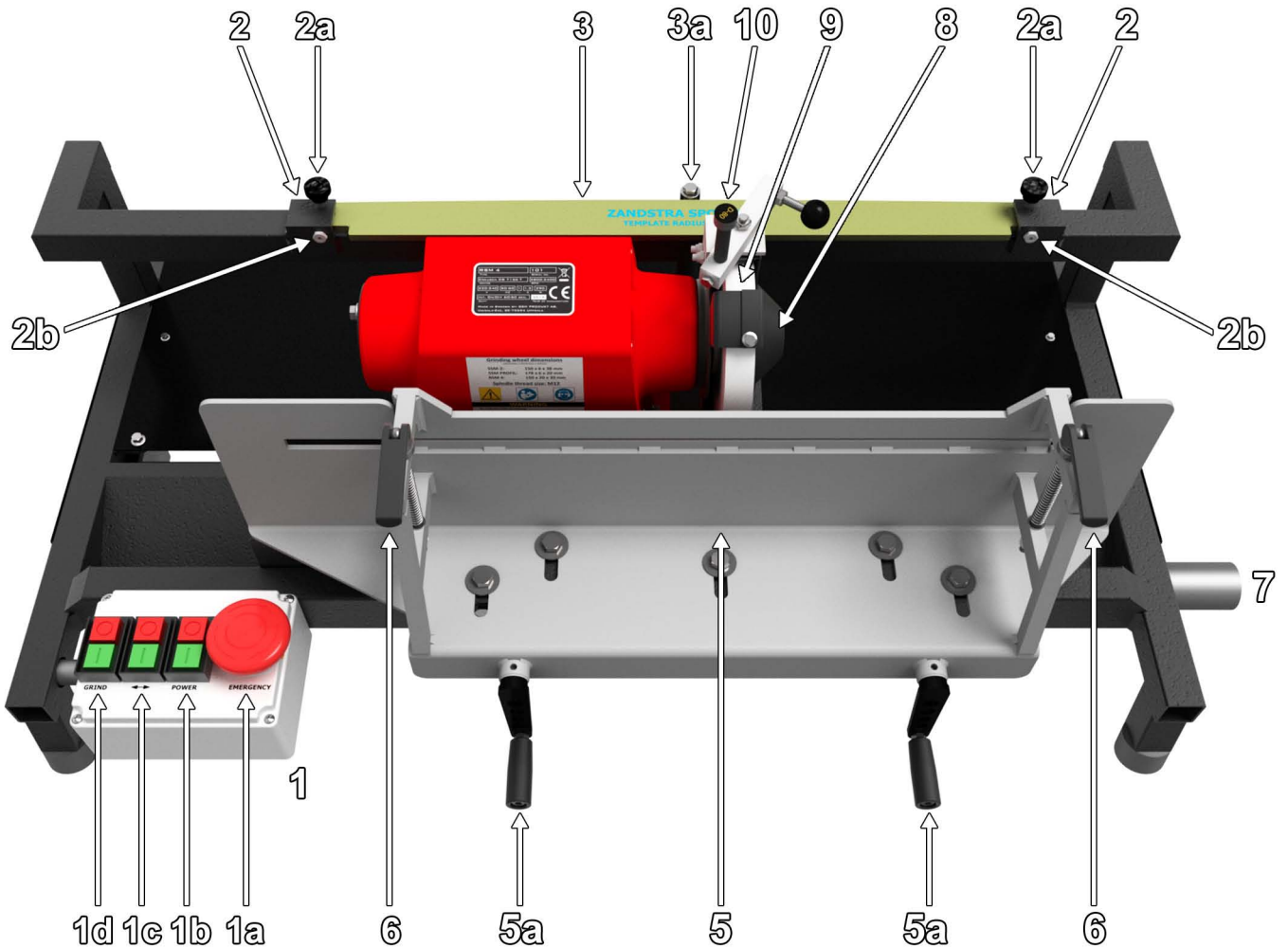
Always use undamaged wheel flanges that are of correct size and shape for your selected wheel.

*Proper wheel flanges support the wheel thus reducing the possibility of wheel breakage. Flanges for cut-off wheels may be different from grinding wheel flanges.*

Do not use worn down wheels from larger power tools.

*Wheel intended for larger power tool is not suitable for the higher speed of a smaller tool and may burst.*

# FUNCTIONAL DESCRIPTION



## 1. Power switch box

- 1a. Emergency stop
- 1b. Power
- 1c. Guide motor
- 1d. Sharpening motor

## 2. Template Holders

- 2a. Fastening Screws
- 2b. Adjusting Screws

## 3. Template

- 3a. Guide Bearing

## 4. Guide Axle (underneath)

## 5. Skate Holder

- 5a. Handles

## 6. Spindles

## 7. Extractor Tube

## 8. Protective Cover

## 9. Grinding Wheel

## 10. Diamond Dresser

## FUNCTIONAL DESCRIPTION (continued)

The machine is intended to do the radius sharpening following a template, on special skate blades such as: short track blades, long track blades and long-distance skates (tour skates).

This is done by automatically moving the sharpening motor with a suitably dressed, rotating grinding wheel against the skate blade (mounted in a holder). The open construction of the machine allows for a constant and easy supervision of the sharpening process.

The body of RSM 4 carries two electric motors, a skate holder, an "extractor tube" and two "template holders".

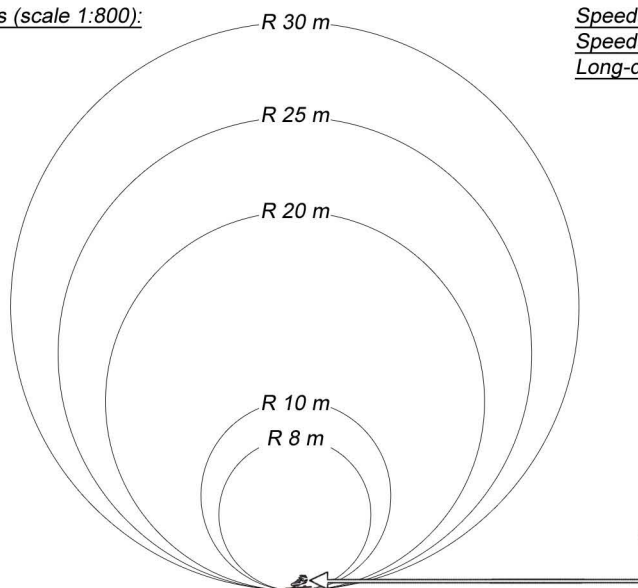
The machine must be kept horizontal. On the sharpening motor axle the following items are mounted in this order: a flange, a grinding wheel, a flange washer, a balancing ring and a fastening nut.

The grinding wheel is partially covered by a protective cover.

1. The Power switch box contains three power switches, one for the power (1b), one for the guide motor (1c) that moves the sharpening motor (1d). There is also an emergency stop (1a) that cuts all power to the RSM 4.
2. The Template holders are used to guide the template. This is done by turning the two knobs (2a) which locks the template into position. There are also two adjusting screws (2b) which can reposition the template in case the bearing does not constantly follow the template.
3. The Template is used to steer sharpening motor via a guide bearing (3a), which is in constant contact with the template by the weight of the motor.  
There are several different templates to choose from and five are included when buying this machine.

The skate blade is not always radius-shaped when it comes from the manufacturer. The shape depends on the manufacturer and on the type of skate. This general shape may not suit the user and may need modification. There are different radiuses to choose from; it depends on sport and the individual skating style.

Single radius (scale 1:800):



Speedskates (short track):

Radius about 4 m - 15 m

Speedskates (long track):

Radius about 17 m - 27 m

Long-distance skates:

Radius about 30 m - 40 m



4. The Guide axle directs the sharpening motor in the horizontal direction (from left to right and vice versa).
5. The Skate holder is used to fasten the skate.  
Place the skate blade between the upper and lower jaw. Turn the handles (5a) and the upper jaw moves up or down.
6. The two Spindles are used to move the skate holder and thereby moving the skate blade inwards or outwards. This allows you to exactly move right and left side of the skate blade until they touch the grinding wheel.
7. The Extractor tube is intended to collect sparks and other debris from the grinding wheel when grinding and dressing. Attach a suitable dust extractor.
8. The Protective cover is a guard that protects if a grinding wheel would break. It also prevents sparks from spreading. The protective cover is fastened by three top nuts.
9. The Grinding wheel rotates downwards and is used to reshape the skate according to the template.
10. The Diamond dresser is used to dress the grinding wheel, to obtain a more accurate sharpening result.

# ASSEMBLY

Your skate radius sharpening machine RSM 4 is delivered complete and protected inside its delivery box. Remove all contents from the box and inspect to ensure no damage was incurred during shipping. Your RSM 4 package should also include the following:

DESCRIPTION	PART	#QTY
Instruction manual	RSM 4 Manual.en	1
Template	MALL	5
Safety glasses	SGL	1
Special wrench (for grinding wheel)	HANY	1

## Getting started:



### **CAUTION!**

IF POSSIBLE, ALWAYS DISCONNECT THE SKATE SHARPENING MACHINE FROM THE POWER SOURCE BEFORE MAKING ADJUSTMENTS.

Place the RSM 4 on a stable, level surface.

The machine comes with a grinding wheel mounted and balanced. Refer to MAINTENANCE: HOW TO CHANGE AND BALANCE THE GRINDING WHEEL (on page 10) if you want to replace or balance the grinding wheel.

**MAKE SURE THAT THE DIAMOND ISN'T TOUCHING THE GRINDING WHEEL WHEN YOU START THE MACHINE.** If necessary, screw the diamond (10) upwards.

Make sure the sharpening motor (1d) is in the starting position, at the left side of the machine. If not, start the guide motor (1c) and move the sharpening motor to a correct position. This repositioning has to be done every time you change the template (3).

**MAKE SURE THAT NO PART OF THE HOLDER (5) WILL TOUCH THE GRINDING WHEEL WHEN YOU START OR OPERATE THE MACHINE.**

Otherwise, use the spindles (6) to move the holder outwards.

Use a proper dust extractor attached to the extractor tube (7). This will reduce the amount of debris released. For more complete protection, wear a suitable face mask covering mouth and nose.

Make sure you wear safety glasses and hearing protection when you use the machine.



# OPERATION

## ADJUSTMENTS before sharpening

### Mount a template

Make sure that the sharpening motor (1d) is at the left side of the machine.

Loosen the two fastening screws (2a) on the template holders. Push the sharpening motor backwards a little so that the guide bearing (3a) is not in the way of the template (3). While holding the motor in this position, place the template with the desired radius in the template holders aligned against the left template holder. (Make sure that the radius profile of the template is positioned against the glide bearing.)

Fasten the template using the fastening screws on the two template holders.

### Balancing grinding wheel

If necessary, exchange the grinding wheel.

Balance it if needed. (See MAINTENANCE: HOW TO CHANGE AND BALANCE THE GRINDING WHEEL.)

### Dressing the grinding wheel

If necessary, dress the grinding wheel (9). To dress it, start the sharpening motor (1d) and use the diamond (10).

Screw the diamond downwards gradually, at the same time turning the diamond holder, so that diamond moves from left and right over the grinding wheel. The last few movements should give dressing. Dress gently.

### Mount the skate

Use the spindles (6) to move the skate holder (5) outwards so that it does not touch the grinding wheel when it moves past the skate holder. Now place the skate blade in the skate holder (pointing from you) and fasten it using the handles (5a).

## SHARPENING

### Template sharpening

Start the machine by pushing the power button (1b).

Then start the sharpening motor (1d) and then the guide motor (1c). The machine will now move the sharpening motor from left to right and back again in cycles over the guide axle (4).

Control that the guide bearing (3a) is aligned against the template (3) over the whole length. If not, this needs to be corrected by using the adjusting screws (2b) to move the template outwards.

Now turn the spindles (6) clock-wise until the grinding wheel touches the skate blade equally at both the left and the right side (it might be necessary to turn them a bit extra on each side so that the grinding wheel touches the skate blade over the whole length).

Once the spindles are in a correct position let the sharpening motor move over the skate blade until no more grinding occurs (grinding wheel no longer touches the skate blade). The skate blade will now have the desired radius. Turn off the guide motor (1c) when the sharpening motor (1d) is situated on the left side of the machine. Turn off the sharpening motor as well.

Loosen the handles and remove the skate.

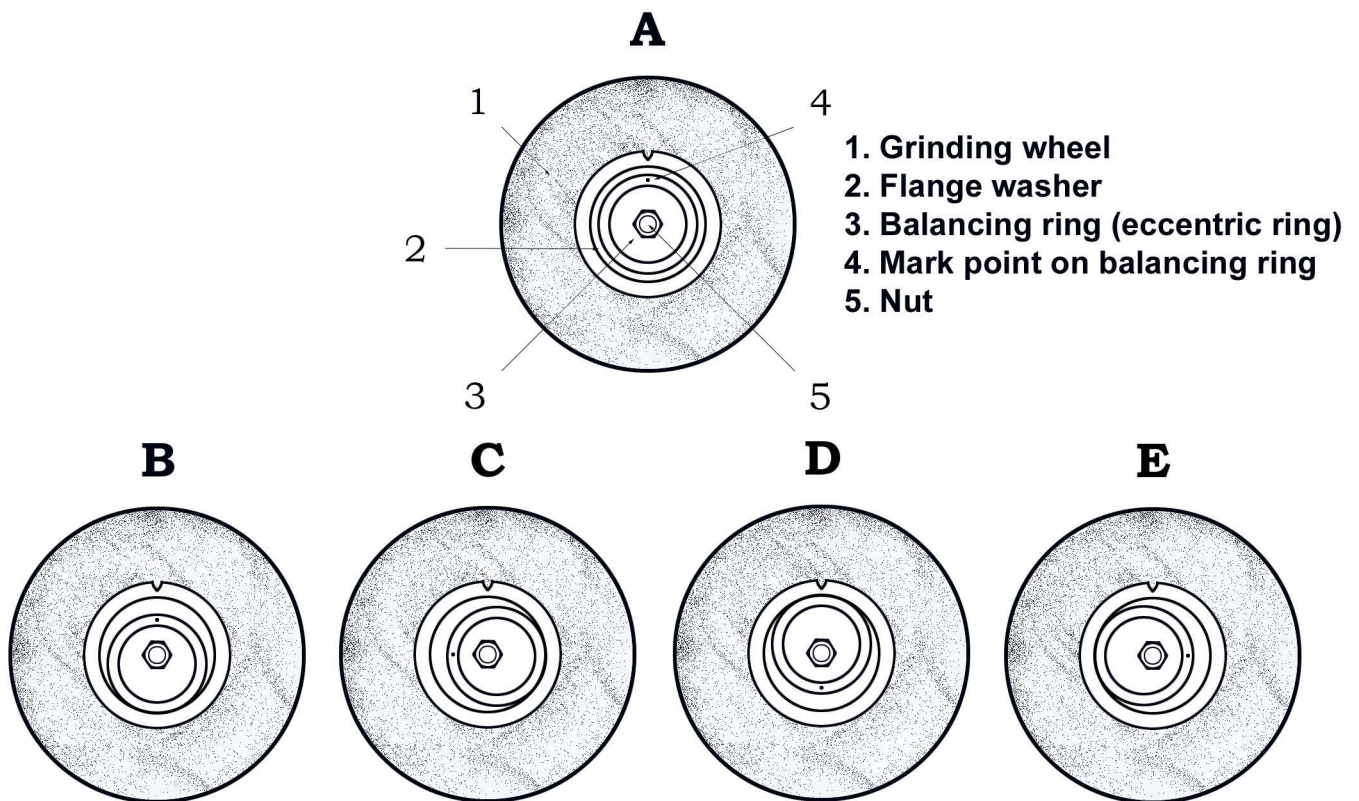
### Final sharpening

After you have radiused the skate blade one needs to sharpen the edge. To do this you need a sharpening jig (there are several different models available) in which you fasten the pair of skate blades.

See also hand sharpening (polishing) instructions at [www.zandstrasport.nl/instructions.html](http://www.zandstrasport.nl/instructions.html)

# MAINTENANCE

## HOW TO CHANGE AND BALANCE THE GRINDING WHEEL



1. Grinding wheel
2. Flange washer
3. Balancing ring (eccentric ring)
4. Mark point on balancing ring
5. Nut

1. First test the grinding wheel for cracks. Hold the wheel on a finger (through the center hole) and gently tap on it. By listening to the sound you can check whether the wheel contains cracks. Remove the protective cover, the nut, the balancing ring, the flange washer and the old grinding wheel. (To avoid wobbling of the grinding wheel, remember to thoroughly clean flange, flange washer and grinding wheel mounting surface before mounting.) Then put the new grinding wheel on top of the flange. Put the flange washer and then the balancing ring on top (in the neutral position, i.e. centered with the mark point in the 12 o'clock direction). Fasten the nut with the grinding wheel having some selected mark (selected by you) in the 12 o'clock direction. Start the engine and dress the grinding wheel with the diamond. Don't forget to have the protective cover on!! If the grinding wheel vibrates, adjust using the following scheme. (The grinding wheel will impart vibrations to the whole machine. They are most easily felt at the motor.)
2. Stop the engine and direct the grinding wheel in the 12 o'clock direction. Loosen the nut and move the balancing ring somewhat in the 6 o'clock direction (i.e. an eccentric position). Fasten the nut and restart the engine. Remember how much the grinding wheel vibrates (Fig. B).
3. Do as in step (2), but with the mark point in the 9 o'clock, 6 o'clock and 3 o'clock directions. The amount of eccentricity of the balancing ring should be kept the same (Figs. C, D, E).
4. If there are fewer vibrations in some direction, turn the balancing ring so that its mark point has that direction. If two directions give fewer vibrations than the others, put the mark point direction between the two. Then fasten the grinding wheel with the balancing ring adjusted. Start the engine and dress the grinding wheel. If the grinding wheel still vibrates, make a precision adjustment.
5. If a precision adjustment is needed, move the balancing ring in small amounts to be more centered or more eccentric or change the direction of its mark point slightly. Start the engine, dress the grinding wheel and test if the vibrations lessen. This is an iterative procedure. It should be possible to adjust until the vibrations practically disappear.
6. When you have found the position giving the least vibrations, then firmly fasten the balancing ring using the nut.

## MAINTENANCE (continued)

### SERVICE

If the machine is used correctly and only for sharpening skates then service is seldom needed. However, the grinding wheel and diamond should regularly be replaced. (The grinding wheel can be used as long as it is physically possible, i.e. there are no collisions between parts).

To retain the capacity of the machine and to continue to get a good result, always keep the machine clean. Clean the outside. Remove dust with a soft brush if needed.

**WARNING!** A complete service should always be performed by a qualified technician. When performing maintenance yourself (e.g. replacing grinding wheel or diamonds) ensure that the electric plug is disconnected. To avoid danger, work on electrical parts should always be done by a qualified technician.

For power tools with type X attachment: if the replacement of the supply cord is necessary, this has to be done by the manufacturer or his agent in order to avoid a safety hazard.

## TECHNICAL SPECIFICATIONS AND DIMENSIONS

<b>HEIGHT:</b>	<b>460 mm</b>
<b>WIDTH:</b>	<b>630 mm</b>
<b>LENGTH:</b>	<b>980 mm</b>
<b>WEIGHT:</b>	<b>54,8 kg</b>
<b>POWER:</b>	<b>290 W</b>
<b>VOLTAGE:</b>	<b>220-240 V (Transformer 110-120 V)</b>
<b>FREQUENCY:</b>	<b>a.c. (1-phase) 50-60 Hz</b>
<b>MAXIMUM RPM:</b>	<b>2800-3400 RPM</b>

<b>GRINDING WHEEL TYPE:</b>	<b>S-4 (Tyrolit) from Zandstra</b>
<b>GRINDING WHEEL DIMENSIONS:</b>	<b>150 * 20 * 20 mm</b>

<b>DIAMOND:</b>	<b>Type D-80 or SD-80 from SSM</b>
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**THE MACHINE IS INTENDED FOR INTERMITTENT USAGE (on 60s / off 60s).**

Your RSM 4 exclusive distributor:

**ZANDSTRA SPORT**

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Holland**

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8500 AD Joure  
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**www.zandstrasport.nl  
Fax: 0031-513-416415**

# ACCESSORIES

## ----- TEMPLATES -----

Five templates are included with RSM 4. There are a large number of templates available:

### SHORT TRACK:

Radius 4 m    Radius 10 m  
 Radius 6 m    Radius 11 m  
 Radius 7 m    Radius 12 m  
 Radius 8 m    Radius 13 m  
 Radius 9 m    Radius 15 m

### LONG TRACK:

Radius 17 m    Radius 22 m  
 Radius 18 m    Radius 23 m  
 Radius 19 m    Radius 24 m  
 Radius 20 m    Radius 25 m  
 Radius 21 m    Radius 27 m

### CROSS COUNTRY:

Radius 30 m  
 Radius 35 m  
 Radius 40 m

Aluminum Checking Device are available in 17,18,19, 20, 21, 22, 23, 24, 25, 27, 30 and 35 meters.

## ----- GRINDING WHEEL, DIAMOND DRESSER -----

### S-4



Grinding wheel

### D-80



Diamond dresser.  
 Natural diamond of good quality.

### SD-80



Diamond dresser.  
 Synthetic diamond rod for same result.

## ----- SHARPENING JIGS -----

### JOHA



For professional skaters.  
 Very stable.  
 Blades are exactly 90°  
 (in relation to the whetstone)

### ALU



For recreational skaters.  
 Light weight.  
 Available in different heights.  
 (depending on what type your going to sharpen)

### SKI BLADES



Sharpening jig for ski blades only.  
 Handy portable jig.

## ----- POLISHING ACCESSORIES -----

### FOSS



Sharpening stone  
 Gives excellent result  
 Size: 25 x 7,5 x 2,5 cm

### NORTON



Sharpening stone  
 A great honing stone  
 Size: 29 x 6 x 2,5 cm

### 3M POLISH



Diamond sharpening stone  
 Uses different grit sizes.  
 Gives a very shiny surface

### POCKETSTONE



Diamond whetstones  
 These are available with  
 three different grit sizes