Canberra Roller Derby League:

Gear Maintenance Manual

Version: 1 - PUBLIC
Last updated: 08/02/2023

CRDL Skates on the lands of the Ngambri, Ngunawal/Ngunnawal People and recognises their continuing connection to land, waters and culture. We pay our respects to and celebrate their Elders past and present. Sovereignty was never ceded.

Contents

Purpose

The CRDL Gear Library acknowledges that skaters have varying levels of knowledge and experience about skate gear and good maintenance practices. This manual was developed as an initiative to ensure all CRDL skaters feel equipped to perform maintenance on CRDL's gear library, and has been adapted for external publication to provide an accessible resource to our wider skating community. As such, the manual focuses on advice for roller derby over other types of skating (e.g.- park, artistic or speed skating), and the language used may reflect internal CRDL concepts.

Included within this manual is a summary of basic knowledge and links to resources for establishing an understanding of how gear functions. There are different ways to do gear maintenance; this manual outlines the basic steps to follow to ensure your gear is working properly, safe to use, and maximise the gear's lifespan.

The key objectives of this document are to:

1. Provide practical instructions on how to maintain, repair and clean skate gear.
2. Provide skaters of all experience levels with the basic knowledge needed to ensure their gear is safe to use.
3. Provide a basic level of knowledge for understanding how gear functions.

Refer to this manual as needed, based on your prior knowledge about gear maintenance.

Safety Disclaimer

All care possible was taken in preparation of this guide; however this is general in nature only and does not constitute comprehensive safety advice. CRDL recommends contacting your gear manufacturer or a professional for specialist advice or safety concerns.

If you're new to skating and it feels like a foreign language, Rollerskate Nation and Community in Bowls have decent glossaries to understand basic terminology.

Overview: Maintenance tasks

When	Task	Reference
Every 6 months (depending on use)	Clean bearings	p.15
Every 3-6 months	Clean pads, helmets, gaskets	p.21
As needed / every 2-3 months	Clean wheels (wipe down)	p.9
	Replace / check toe stops	p.17
Every 6 months / as needed	Rotate wheels	p.7
	Leather care (boots)	p.40
	Check: 1. Plate for rust and cracks 2. Mounting nuts 3. Axles 4. Axle nuts 5. Kingpin 6. Pivot pin + pivot cup 7. Cushions 8. Trucks	Items 1 - 4: p.26 p.27 p.28 p.30 p.32
	Checking if gear needs replacing	p.43
	Order replacement parts and cleaning supplies	p.44

1. Wheel Maintenance

Last updated: August 2022

Basic knowledge about wheels

There are different *types* of wheels:

- **Indoor wheels:** a harder wheel designed for smooth, indoor surfaces like polished wood or concrete (90a-903a), sportcourt (94a-96a), and rubberised gym floor (97a-100a).
- **Outdoor wheels:** a softer wheel designed to cope with bumps on rougher surfaces (usually 78a-84a).
- **Hybrid wheels:** designed for both indoor and outdoor (typically 84a-86a/88a), these wheels have a good grip for outdoor skating, but are hard enough for indoor rinks.
- **Skatepark wheels:** harder than the average outdoor wheel (92a-97a), these wheels are narrower and harder to suit the smooth concrete surfaces of skateparks.
- **Derby specific wheels:** indoor wheels with performance features designed for derby players (e.g.- modifications in height / width / core type).
    - **Morph wheels:** designed for derby, these wheels are split with 2 durameters, providing speed from the harder compound, and grip from the second compound. E.g.- Reckless Morph wheels.

Durometer and grip

Durometer determines how soft or hard a wheel is.

- The *lower* the durometer, the *softer* the wheel is.
- The *higher* the durometer, the *harder* the wheel is.

Softer wheels will provide more grip, harder wheels increase speed.

The floor surface determines what durometer your wheels should be.

- If the floor is grippy (e.g.- rubberised gym floor), you need harder wheels.
- If the floor is slippery (e.g.- polished wood), you need softer wheels.
- Softer wheels are preferable when skating outside because they help absorb the bumps on a rough surface.

A skater's weight and skating style will influence the durometer that suits their needs. Skaters who weigh more will get relatively more grip from a wheel and may prefer harder wheels.

Wheel height (diameter)

Wheel heights range between 55mm - 70mm[1]. Most derby wheels are either 59mm or 62mm.

[1] Wheels taller than 62mm are generally for outdoor skating only - they are too unstable for derby.

Taller wheels are:
- Faster
- Heavier
- Less stable

Shorter/smaller wheels are:
- Slower
- Lighter
- More stable

Wheel width (profile)

Wheel width determines how much of the wheel's surface is in contact with the floor. Widths range between 30mm - 42mm. Wider wheels (44mm) are good for jam skating, narrower wheels (31mm / 35mm) are good in artistic/rhythm skating. Derby wheels are typically in between the two options (38mm).

Wider wheels:
- Increase stability
- Increase grip
- Heavier
- Less agile

Narrower wheels:
- Less bulky
- Increase manoeuvrability
- Lighter
- More agile
- Less stable

Ribbed, curved, squared:

Wheels can vary in profile - some may be smooth or ribbed, have squared edges, or be rounded. The more rounded the edges are, the faster the wheel.

Core (hub) types

The core is the inside centre of the wheel, and affects the performance of the wheel. The core's material adds to the wheel's weight.

Common cores for roller skate wheels:

Aluminium core:
- Best performance on the market
- Very rigid design
- Expensive
- Heavy

Nylon core:
- Affordable
- Light
- Less rigid design

Hollow core:
- Light
- Rigid design
- Mid-range price

Materials:
- Nylon
- Fibreglass
- Other plastics

Tip: The rigidity of the core determines the quality of the energy transfer, which affects speed. A very rigid wheel has excellent energy transfer, increasing speed. A less rigid core has poor energy transfer, causing the wheel to flex under pressure and give a slower, sluggish feeling when skating.

References

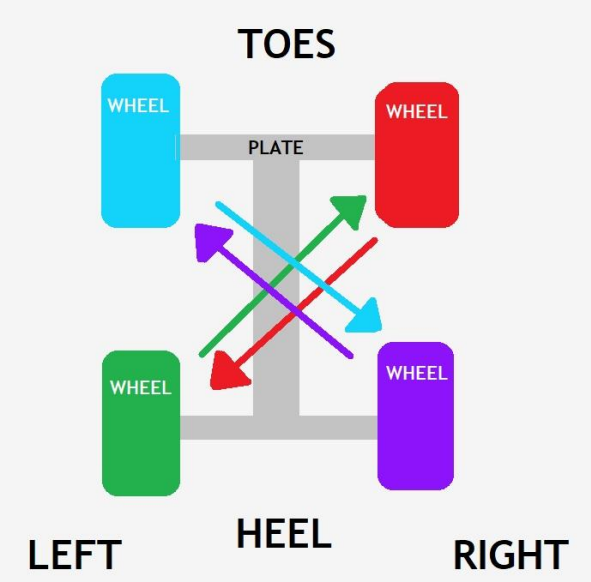
https://www.rollergirl.ca/misc/roller-derby-wheels.html
https://rollerskatenation.com/wheel-faq/#:~:text=You%20will%20need%20to%20check,damaged%20they%20should%20be%20replaced

1a. Identifying and managing wheel wear

Wheels wear with use and should be rotated regularly for even wear. Wheels should be rotated when you notice that (typically) the inside edge is wearing faster than the outside edge. If you can noticeably see that 1 of your wheels is smaller than the others, you have waited too long. Be cautious of chipped wheels, or severe 'balding' (when the ribbed surface of a wheel wears away to smooth). Chips in wheels decrease stability, and balding wheels are continually decreasing the wheel height, and will eventually need to be thrown out.

A tip for rotating wheels: rotate in an 'X' pattern.

- *Left rear → right front.*
- *Right front → left rear.*
- *Left front → right rear.*
- *Right rear → left front.*



You can also flip the wheel (put the print on the inside).

References

https://rollerskatenation.com/wheel-faq/#:~:text=You%20will%20need%20to%20check,damaged%20they%20should%20be%20replaced
https://www.skateboardershq.com/when-should-you-replace-your-skateboard-wheels/

1b. Changing wheels

When to change wheels:

- To rotate the wheels and increase their longevity by evening out wear.
- To put different wheels on the skate (or put these wheels on a different skate).
- To clean the wheels and/or the skate's plate.

What you need:

- A skate tool - a crab tool or Y-tool. (a socket wrench will also work - for most skates you'll need a 13mm socket).
- Replacement parts (e.g.- new wheels AND bearings), or cleaning supplies.

How To: Taking wheels off

Step 1. Lie the skate on its side, so you can easily remove the nut (see Appendix A p.45 if you are new to skate anatomy).

Step 2. Figure out which slot of the skate tool fits the nut.

Step 3. Placing the skate tool over the nut, rotate left to loosen it. Continue until the nut can be removed. The wheel can now be lifted off the axle.

How To: Putting wheels on

Step 4. Put the wheel back on the axle.

- If you are replacing with new/different wheels, make sure they have bearings.
- Don't use bad bearings. See 2b (p.15) for cleaning bearings.
- Make sure the wheels and plate are clean and undamaged.

Step 5. Place the nut back on top of the wheel, and turn right to tighten the nut.

Step 6. Check that the wheel is free spinning. See https://www.youtube.com/watch?v=6fjTtq0hR5Y

- The wheel should be secure and not move much between the plate and the nut.
- HOWEVER, it needs to spin freely - when you spin it, it should continue spinning. If it is too tight, the wheel will not spin well when skating.

Repeat these steps with all the wheels you are changing. Make sure the tightness of each wheel is similar, so that they all spin at roughly the same speed.

Resources

https://www.youtube.com/watch?v=9iLnDM6JM_M
https://www.youtube.com/watch?v=DWqxxVzzvIs

1c. Cleaning wheels

When to clean wheels:

- For the most part, a visual assessment of dirt/grime build up will determine when to clean wheels.
- If the wheels are not gripping the floor surface when skating[2].

What you need:

For light cleaning:

- Wet wipes, OR paper towel/cloth + cleaning agent

For a thorough clean:

- Dishwashing liquid, or liquid soap
- Paper towel or cloth
- Container / bowl / bucket (large enough to put all the wheels in)
- Bearing press / tool (only if the wheels have bearings in them)

How To:

For light cleaning, wipe down the wheels using either wet wipes, or paper towel and a cleaning agent. This can be done without needing to take wheels off skates.

If there is still grime on the wheels and a more thorough clean is required, follow these steps:

**If wheels are on skates, remove following steps outlined in 1b (p.8).*

**If wheels have bearings in them, remove bearings following steps outlined in 2a (p.12).*

Step 1. Fill a bowl / bucket / container with warm water (enough to cover all the wheels) and 2-3 drops of dishwashing liquid / liquid soap. The mixture should be soapy, but it is best to start with a small amount of soap and add more as required.

Step 2. Wet a cloth / paper towel and rub the grime off the outside of the wheels. For very dirty wheels, you can soak the wheels in the container to loosen the dirt first. Soaking time will vary depending how dirty the wheels are.

IMPORTANT: Do not soak wheels with bearings still inside, or wheels with metal cores - they will develop rust. If you are unsure if the core is metal, assume that it is.

Step 3. Use the cloth / paper towel to clean the inside of the wheels.

Step 4. Once you have cleaned all the wheels, use a clean cloth / paper towel to dry them. Leave the wheels to air dry completely before reinserting bearings and putting on skates.

Resources

https://www.youtube.com/watch?v=GQY3yNmdIdk

[2] Noting that the lack of grip is not a result of skating on too ‘hard’ wheels for the floor type.

2. Bearing Maintenance

Last updated: August 2022

Basic knowledge about bearings

There are different types of bearings:

- **Steel alloy:** metal bearings are the most common and affordable. They are more sensitive to damage from friction, pressure, and heat, which can warp and hinder the performance of the bearing.
- **Swiss:** high end bearings tailored for advanced skaters. They accelerate faster and roll further and smoother than metal bearings. The main distinction from other bearings is that “Swiss” bearings are made with better technology. They last longer than standard steel bearings.
- **Ceramic:** the best on the market because they do not rust, are lighter, and more durable than metal bearings[3]. Their lower friction pressure than metal bearings makes them long-lasting while requiring less maintenance.

What do bearings do?
Bearings help the wheel move freely on your skate. The “roll out” factor determines a bearing’s quality. Bearings with a high roll out will roll further with each stride as you skate, allowing you to skate faster, further, and with less effort.

Performance ratings
Most bearings have an ABEC rating, scored on a scale of 1-9. The higher the ABEC score, the more precisely made the bearing is, and the longer your wheels take to stop spinning after you stop pushing. This is an indicator of higher performance quality. Some manufacturers list a “skate rated” label instead, meaning the bearing has been tested and approved for skating. Swiss and ceramic bearings do not have an ABEC rating because these labels are their own testament of high quality.

Shield types
The type of shield on a bearing determines how to clean your bearings.

- Most high end bearings have a *removable* shield for cleaning and lubricating the steel balls inside the bearing. This can be a rubber shield or a metal shield with a wire.
- Some bearings have a *non-removable* shield - you can clean these bearings in a solution, however cannot remove the shield for thorough cleaning or to lubricate the balls inside the bearing. These bearings have a shorter lifespan and need replacing more regularly. Do not try to remove the shield - if you damage the shield, you may hamper the performance of the bearing.

Size

[3]Ceramic bearings are self-lubricating. The ceramic balls won’t rust, but the steel casing will - so it is still ideal to avoid skating in puddles/rain.

There are different sized bearings, so you should always check that the bearing size fits on the axle of your plate[4]. Check what number is stamped on the shield to identify what size bearing you have.

- Micro (688) - rare.
- 7mm (627) - uncommon.
- 8mm (608) - the industry standard.

Tips:

- Each wheel requires 2 bearings - you need 16 bearings for a pair of skates.
- If in doubt about quality, Bones and Bionic consistently maintain high brand reputations for their products.

References

https://www.derbywarehouse.com/learningcenter/Wheels/Bearing-Buying-Guide.html
https://rollerskatenation.com/common-questions-bearings/
https://www.devaskation.com/how-to-clean-roller-skate-bearings/
https://www.devaskation.com/what-are-swiss-bearings/
https://www.devaskation.com/what-are-ceramic-bearings/

If you are unfamiliar with bearings/skate anatomy, see Appendix A (p.45) and Appendix B (p.46).

[4] 7mm or 8mm is a measurement of the diameter of the axle on your plate. Most modern plates have a 8mm axle, so 8mm (608) bearings are the most commonly manufactured.

2a. Changing bearings

When to change bearings:

- To change to another pair of wheels (that don't have bearings already).
- To clean the wheels and/or bearings - see 2b. (p.15) for identifying dirty bearings.

What you need:

- Any replacement parts (e.g.- different wheels or bearings).

Plus ONE of the following tools:

- A bearing puller tool (https://www.skaterhq.com.au/products/bones-bearing-puller-tool-white)
- A bearing press (https://www.skaterhq.com.au/products/bearing-press?_pos=10&_sid=3d1e0b931&_ss=r)
- A flathead screwdriver

3 methods for changing bearings using different tools are outlined below because it is a common situation and you may not always have the same tool available.

How To: Removing bearings

Bearing Press:

Step 1. Lift the lever up, and place the wheel on the hook of the bearing press (bearing facing in towards the press).

Step 2. Hold onto the wheel to stabilise it, and press down on the lever to remove the bearing. The bearing should now pop out.

Step 3. Repeat with all bearings you are removing.

Bearing Puller:

Step 1. Insert the bearing puller through the centre of the bearing/wheel by holding down the button on the handle.

Step 2. Once inserted, release the button.

Step 3. Pull outwards using the handle; the bearing is now removed. Repeat with all bearings you are removing.

Flat-head Screwdriver:

(In an emergency: this method is more tedious and has a higher risk of damaging your bearings).

Step 1. Insert the screwdriver into the middle of the bearing. You want to be holding the screwdriver at an angle, with the tip in-between the two bearings (i.e.- don't insert it vertically all the way through to the other side).

Step 2. Press down on the handle of the screwdriver, so that the tip of the screwdriver pushes the bearing upwards. Continue until the bearing pops out - you may need to rotate the wheel in your hand to pry the bearing up evenly. Avoid damaging the bearing's shield.

Step 3. Repeat with all bearings you are removing.

How To: Reinserting bearings

Bearing Press:

Step 1. Lift the lever and shaft of the press up.

Step 2. Slide the bearing onto the shaft, and then the wheel on top of it.

Note: if you are confident using the bearing press, you can put the 2nd bearing on top of the wheel, to insert both bearings at once. However this increases the chance of bearings not inserting properly - make sure to check this afterwards.

Step 3. Lower the shaft back down to its original position (horizontal), and then press down on the lever to insert the bearing.

Step 4. Repeat with all the wheels. Each wheel should have 2 bearings (1 on each side).

Step 5. Check that the bearings are all in properly - hold the wheel with your fingers on the bearings, and spin the wheel. It should spin smoothly and freely. If not, the bearings may:

- Be unevenly inserted in the wheel.
- The bearings are dirty and should be cleaned.

Bearing Puller:

Step 1. Insert the bearing puller through the centre of the bearing by holding down the button on the handle.

Step 2. Once inserted, release the button.

Step 3. Centre the bearing directly over the centre of the wheel, and push the bearing in (by pushing down on the handle of the tool).

Step 4. Once the bearing is in (make sure it has been fully inserted), press down on the button on the handle and remove the tool.

Step 5. Repeat with all the wheels. Each wheel should have 2 bearings (1 on each side).

Step 6. Check that the bearings are all in properly - hold the wheel with your fingers on the bearings, and spin the wheel. It should spin smoothly and freely. If not, the bearings may:

- Be unevenly inserted in the wheel.
- The bearings are dirty and should be cleaned.

Without a tool:

If you do not have a skate tool, you can insert bearings into a wheel by either pushing them in using your hands, or by using the axle of your plate.

Step 1. Centre the bearing directly over the centre hole of the wheel. If using the axle on your plate, thread bearing onto the axle, and then your wheel.

Step 2. Push the bearing in with your fingers, or push the wheel down on the axle to insert the bearing.

Step 3. Repeat with the second bearing on the other side of the wheel. Then repeat with all wheels and bearings you are using.

Resources

Bearing Press:

https://www.youtube.com/watch?v=P_5BWTftxZA
https://rollerskatenation.com/how-to-use-a-bearing-press/

Bearing Puller:

https://www.youtube.com/watch?v=F6Lgee7PpCE
https://www.youtube.com/watch?v=9iLnDM6JM_M

Screwdriver: https://www.youtube.com/watch?v=Ivqvb8s7r8I

Without tool: https://www.youtube.com/watch?v=Ivqvb8s7r8I

2b. Cleaning bearings

When to clean bearings:

- When your wheels are not spinning freely.
- When you skate/spin your wheels, you hear crunching, grinding or buzzing.
- If you hear squeaking, you need to lubricate the bearings.
- After skating in rain/water.
- Heavy skating: every 2 - 3 months.

What you need:

- Paragon bearing cleaning bottle (with stem to hold bearings in place)
- Paragon citrus bearing cleaner
- Paragon bearing speed lube
- Paper towel / cloth

Important tips:

- **Cleaning bearings and lubricating bearings are two different things - you should be doing both.**
- Do not lubricate bearings before cleaning - this will trap dirt in the bearing.

How To:
If the bearings are in wheels, remove bearings (see 2a, p.12), then do the following:

Step 1. If the shield is removable, remove it. If the shield is not removable, skip to the next step. If you are unsure what shield type you have, see: https://www.youtube.com/watch?v=AXmZhfvH9y0

- Removing rubber shields: use a sharp, thin object (e.g.- pin or needle) and insert on the inside edge of the shield to gently lift up. The shield should pop out. Do not force the pin - damage to the shield can hinder the bearing's performance.
- Removing metal shields with wire: insert the pin into the gap on the outer edge of the bearing's shield, and angle to lift up and out from underneath the wire. The wire should lift and pop out. Turn the bearing over and the shield will fall off (you may need to lightly tap it).

Step 2. Stack the bearings on the rod attached to the lid of the bearing cleaner bottle so that the open side with the steel balls are facing towards the lid. Use the spacers to separate between the bearings, to allow the cleaning liquid to spread properly. Once all the bearings are on, screw the nut onto the end of the rod to hold the bearings in place.

Step 3. Fill ⅓ of the cleaning bottle with Paragon citrus bearing cleaner, and screw the lid with bearings onto the bottle. (Make sure it is tightly closed)

Step 4. Shake the bottle so that the cleaning solution can spread through the bearings. (For ~10 seconds. If the bearings are VERY dirty, shake for longer, or leave to soak in the solution for 10 minutes[5]).

Step 5. Take the bearings out of the bottle, and remove excess liquid with a cloth / paper towel (smacking the bearings against a piece of paper towel can help - you will see the grime come off). Leave bearings to air dry completely.

***Note:* dispose of bearing cleaner responsibly**. It is a solvent and should not be poured down the sink.

Step 6. Apply a small amount (~2 drops) of lubricant to each bearing (on the exposed ball bearings). Apply so that the drops are as far away from each other as possible, to ensure the entire bearing is lubricated.

Step 7. Reassemble the shields on the bearings. For rubber shields, they should easily click back into place by using your fingers to align them and press them down. For metal shields, place the shield on top of the bearing, and then insert both ends of the wire and push the metal into place. You can test that the shield is in correctly by checking that the shield looks level, and that the bearing is able to spin freely when held between 2 fingers.

Step 8. Make sure to spin all the bearings to spread the lubricant throughout the bearing.

Resources
https://www.youtube.com/watch?v=rj6rQpgSKfo
https://www.youtube.com/watch?v=f3CUuW3zAz0

[5] If leaving bearings to soak - you will need to take the bearings off the rod, and make sure they are completely covered by the solution.

3. Changing, replacing or adjusting toe stops

Last updated: August 2022

There are 3 types of toe stops:

- **Bolt-on toe stop** *(non-adjustable)*: found on most entry level skates and have a hole with a bolt directly through the centre.
- **Adjustable toe stop:** attached to a stem, these screw into the plate and can be set at different heights.
- **Jam plug:** these replace toe stops and are not designed to be used for stopping or slowing. Mostly used by jam and rhythm skaters.

When to change, replace or adjust toe stops:

- *Change* toe stops if using different skates that do not already have toe stops, or have a different brand/type than what you prefer to use.
- *Replace* toe stops if they are significantly worn down.
    - For adjustable toe stops - they will be very close to the metal stem.
    - For bolt on toe stops - they will be worn down close to the plate and the bolt may be at risk of damage.
- *Adjust* toe stops to ensure they are at the recommended height for the skater. This varies by skater, but as a general rule: when weight is on the toe stops (i.e.- standing on toes), allow 3-4 fingers width between the bottom of the back wheels, and the ground. See Appendix C (p.46).

What you need:

- Depending on the skate - a skate tool, screwdriver, or allen key.
- Replacement toe stops (if needed)

How To: Bolt on toe stops

Step 1. Use a screwdriver to loosen and remove the bolt (turning left/counter-clockwise).

Step 2. The bolt will detach from the plate when fully unscrewed, and you can take the toe stop off.

Step 3. To reattach the toe stop: thread the bolt through the hole in the toe stop (the smaller end of the 'cone' shape goes against the plate). Screw the bolt back into the plate (right/clockwise).

How To: Adjustable toe stops

If only adjusting toe stops (not replacing): perform step 1, then skip to step 4.

Step 1. Use the crab skate tool to loosen the lock nut at the base of the toe stop where it attaches to the plate. Some plates have a lock pin on the side of the plate near the toes - use an allen key to loosen (turning left/counter-clockwise).

Step 2. Once loosened, unscrew the toe stop by hand. The toe stop will detach from the plate when fully unscrewed.

Step 3. To reattach the toe stop, screw it back into the plate slightly (make sure the lock nut is threaded onto the stem).

Step 4. Check the toe stop height by positioning the weight of the skate directly on top of the toe stop, with the toe stop flat on the floor surface. There should be 3-4 fingers width between the back wheels and the floor. Keep adjusting the toe stop by screwing further in/out until you reach the desired height.

Step 5. Tighten the nut or kingpin (turning right/clockwise). Ensure it is secure, and that the toe stop does not move, shift or twist.

References & Resources

https://rollerskatenation.com/toe-stops-plugs-101/
https://www.youtube.com/watch?v=-Qv0AzXDbss

4. Protective pads, helmets and gaskets

Last updated: November 2022

Basics knowledge

What are gaskets?

- A fabric sleeve worn underneath knee pads that compresses and stabilises the knee joint to prevent or manage pain from a knee injury.
- Ideal for skaters with weak or injured knees.
- Improve the fit of knee pads by providing extra padding if the pads are shifting slightly.

Do padded shorts and tops exist?

Yes! Padded shorts and vests offer skaters extra protection when playing derby.

- Padded shorts are good for skaters who feel vulnerable when taking big hits.
- Padded vests protect your chest and ribs, and help skaters retain their breath when receiving big hits to the ribcage.

It is personal preference whether skaters use these, as they are somewhat expensive. STEAKS Contact wear is a popular option.

Helmets

There are two types of helmets commonly used in derby - skate helmets and hockey helmets. Bike helmets are not suitable, as they do not protect the back of the head. This manual will focus on skate helmets as they are the helmet type most commonly used in roller derby.
*The most important feature to note, regardless of helmet type, is if the **helmet has passed safety standards***[6].

Helmet shells come in different sizes, but it is the *helmet liner* you want to pay attention to for determining fit. The liners are removable and able to be swapped for different sizes to adjust fit. You can replace the liners when they show wear, rather than buying a new helmet. **A helmet is fitted correctly when it sits level on your head, just above the eyebrows. You should be able to nod your head with the straps undone, without the helmet sliding off**. Watch this video if you need more tips on helmet fitting.

Important: if a helmet has received a hard hit, it is no longer safe to use.

Some helmets have a visor attached to the front, protecting the skater's face. Other technical aspects of helmets are more detailed, such as ventilation, foam types, and helmet weight. You can learn about these here.

Tips:

- Triple 8, S-One, and Protec are very popular brands for derby helmets.

[6] The safety certification should always be listed in the product description, and the helmet will have a sticker on the inside or back of it. Helmets can be certified to withstand single-impact or multi-impact. To know more, read here.

- WFTDA recommends that actively scrimmaging skaters replace their helmets once a year.

References

https://www.derbywarehouse.com/learningcenter/HelmetBuyingGuide.html#:~:text=In%20roller%20derby%2C%20skaters%20most,skate%20helmets%20or%20hockey%20helmets.
https://wftda.org/gear-up/helmets
https://www.derbywarehouse.com/Smith_Scabs/descpage-SSG11.html
https://www.youtube.com/watch?v=p2iRUOb-4W0

4a. Cleaning pads, helmets and gaskets

It is recommended to air pads out regularly, and spray with fabric disinfectant. This will reduce gear stink and the frequency of washing. DO NOT pack away damp gear.

When to clean pads, helmets and gaskets:

- When the derby stink just won't leave
- Every 3 months or so if scrimming regularly

What you need:

- Fabric disinfectant spray
- Storage tub or bucket to soak gear in
- 1 scoop laundry detergent
- Optional: 1 cup vinegar and/or ½ cup baking soda

How To: Storage tub

FOR: any gaskets, fabric helmet liners, knee pads, elbow pads, and wrist guards. Ideal if cleaning a lot of gear.
NOT: Foam helmet liners.

Step 1. Remove helmet liners from helmets. Secure all velcro on protective pads, with straps as open as possible (i.e.- fasten straps over the shield) - this will open up the pads for thorough cleaning.

Step 2. Place in a large storage tub or bucket (or bathtub), and fill with hot water and 1 scoop of laundry detergent. You can add vinegar (1 cup) and/or baking soda (½ cup) if the gear is very stinky. Make sure the water covers the gear.

Step 3. Agitate the water by moving the gear around and holding it down to submerge the water. (Remember the water is hot - do not burn yourself).

Step 4. Leave the gear to soak - generally overnight is a decent time frame, but the minimum is a couple hours. The water will change colour - you may need to repeat the soaking process a couple times if the water is still very brown after cleaning.

Step 5. After soaking, rinse the gear in cold water to wash out any residual laundry detergent.

Step 6. Hang gear out to dry completely before packing away. Avoid machine drying.

How To: Washing machine

FOR: gaskets, knee pads, washable helmet liners, and wrist guards (with removable shields/splints).
NOT: elbow pads, foam helmet liners, or knee pads with non-removable padding/shields.

Step 1. Remove shields and foam padding from knee pads. See 4b (p.23) if you are unsure how to do this. Remove splints from wrist guards, and fabric helmet liners from helmets.

Step 2. Secure velcro on the matching pad (to form a pair). This will protect the velcro and your gear from tearing. You want to secure on the matching pad because if you refasten the straps on the pads individually, the water will not be able to clean your gear as thoroughly.

Step 3. Put the gear in a delicates bag or a pillowcase - this will prevent tangling when washing, and the risk of damage if the velcro unfastens. Tie a knot in the pillow case to close.

Step 4. Use the washing machine on a delicate, hot cycle with laundry detergent. For extra stinky gear, you may want to soak first, or do a couple wash cycles.

Step 5. Undo pads and leave to air dry. Avoid putting in a dryer as this can damage the fabric and velcro, and never machine dry knee pad foam - you will ruin it.

Step 6. Once the gear is completely dry, you can reassemble it and pack it away.

Resources
Storage tub: https://www.youtube.com/watch?v=djFzq4LID6E&t=75s
Washing machine: https://www.youtube.com/watch?v=CVKw7V3fo9s

4b. Changing removable knee caps

You may sometimes wish to change removable knee pad caps - usually skaters do this when they have 2 sets of knee caps and are using one for indoor skating, and the other for skateparks/outdoors.

How to: Removing knee cap

Step 1. Hold the knee pad, positioned in the direction as if you were about to put it on.

Step 2. Grip the bottom end of the cap and pull up towards you. You need some force to separate the velcro, but don't tear it off - there is a strap underneath.

Step 3. Undo the strap on the back of the cap, and unfasten it from the buckle. The knee cap should be easily removed now.

How to: Replacing knee cap

Step 1. Insert the velcro strap through the buckle to attach the new cap.

Step 2. Pull the velcro strap tight and attach to the back of the new cap.

Step 3. Align the cap with the remaining velcro strips, and press down to secure. Check that the cap is centred.

Tip: to increase longevity of pads, ensure the shields have adequate teflon coverage.

Resources
https://www.youtube.com/watch?v=os31RJdpod4

5. Plates, cushions, trucks, and more

Last updated: August 2022

5a. Plates

Material: Plates can be made from 2 materials.
Nylon (*plastic*):

- Lighter
- Used on less expensive skates
- Flex[7]

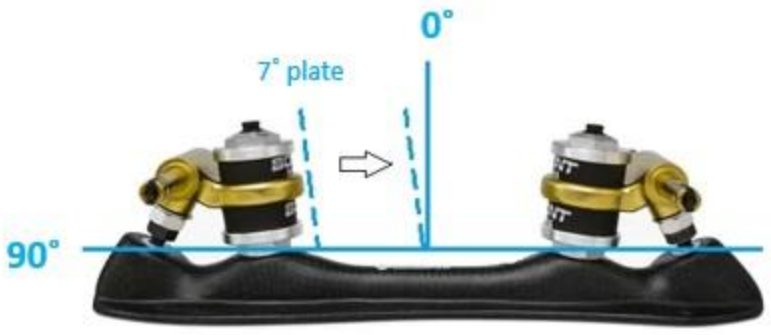
Metal alloy:

- Aluminium (most common), magnesium, or platinum[8]
- More resistant to breakage or damage from rough use
- Ideal for heavier skaters
- Cheaper options are heavier than nylon. High end metal plates will be lightweight.
- Less flex / better power transfer

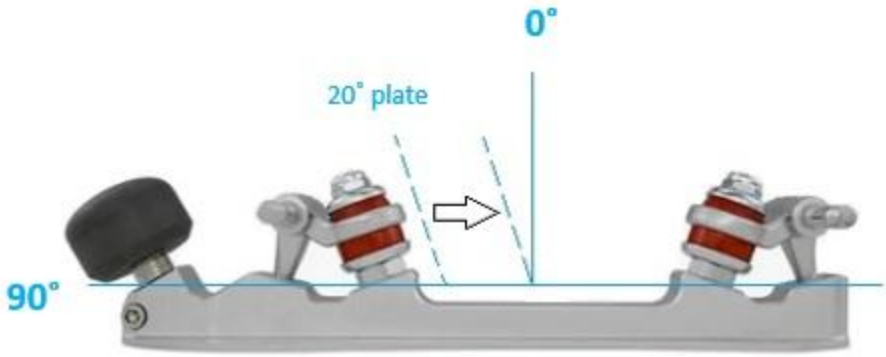
Axle size
Most axles are 7mm or 8mm. **The majority of current skates are 8mm** to fit the most common bearings size. The difference between the two axle sizes is that there is more “wiggle” room between the bearing and the axle for 8mm, and less “wiggle” for 7mm.

Plate angle
Plates come at different angles - this is the angle of the kingpin and cushion to the base of the plate attached to your boot. Think of vertical as being 0 degrees, and horizontal (being parallel to the floor/sole of your boot) as 90 degrees. The most common angles are 10, 20, or 45 degrees. **The lower the angle, the more stable you feel** when skating because the kingpin and cushions are more vertically aligned underneath the skater. This is the more common type. Lower angles are good for power transfer when skating forward, and edgework.
The higher the angle, the more ability and responsiveness to direction changes you have when skating (making laterals easier and faster). The kingpin and cushions on a higher degree plate are more horizontally aligned.

[7] Higher flex in a plate = less power transfer. This is not ideal for skating styles that transition to your toe stops when stopping at speed, or accelerating quickly. Low flex = better power transfer.
[8] There are further breakdowns of metal plates based on the quality of the metal: refer to https://www.derbywarehouse.com/learningcenter/PlateBuyingGuide.html if wanting more information.



https://bont.com/collections/roller-skate-plates/products/zeus-carbon-nts-speed-roller-skate-plates



https://bont.com/collections/roller-skate-plates/products/tracer-roller-plate

https://sk8ratz.com/sure-grip-avenger-aluminum-black-plates-with-da45-trucks/

Plate Sizing and Mounting

Plate sizing varies by manufacturer, and CRDL recommends consulting a skate technician and/or your manufacturer if you are wanting to mount boots or build skates, as there are different mounting options based on different skating styles. If you need information about plate sizing, Derby Warehouse has a guide and a basic introduction to mounting types.

Plate maintenance tips
See Appendix A (p.45) if you are unsure what these parts are / where they are located.

When to perform maintenance:

- On an as-needed basis - if you notice a change in how the skates 'feel' while skating, or if something isn't working how you need it to.
- It is recommended to perform a visual inspection every 3-6 months (or when you conduct other maintenance). This will determine whether you need to take a closer look at anything.

General: Check that the plate is free of rust or cracks.

Mounting nut: If replacing one of the mounting nuts that holds the plate and boot together, use a mounting nut or lock nut for the replacement. A regular nut is likely to fall off, while the plastic seal on lock nuts and 'teeth' on mounting nuts hold them in place.

[9]

Axles: These are generally hard to bend or break, however hair can get wrapped around them. **Whenever you change wheels, visually check for grime buildup on the axles**, and use a wipe/cloth to clean if needed.

Axle nut: Check the tightness of the axle nuts holding the wheels in place. If they are too tight, the wheels will not spin properly and the bearings could be damaged (see section 1b., p.8 for knowing how tight wheels should be). If they are loose, the skates will feel unstable, and risk the wheel coming off.

Are the skates pulling in one direction, instead of rolling straight? Check for:

- A bent axle
- Misaligned plate
- Too much tension in one of the trucks

[9] Image source: https://derbylisting.com/word/2017/08/22/roller-skate-maintenance-101-part-one/

Kingpin: Check the kingpin nut has not become loose or fallen off. Either of these create room for the kingpin to 'wiggle'. This can strip the threading on the plate[10], or break the kingpin and pivot cup. If the skates start feeling unstable, check the kingpin is not loose.

Grinding during park skating can bend and wear down your kingpin, so you will need to check on it more often.

How to: Replace the kingpin (if it has cracked)

Step 1. Remove wheels as outlined in section 1b. (p.8).

Step 2. Unscrew the kingpin nut using a skate tool, and remove the cushion retainers, cushions, and truck.

Step 3. Loosen the lock nut at the base of the kingpin where it inserts into the plate. You should now be able to remove the kingpin.

Step 4. Insert new kingpin and tighten the lock nut.

Step 5. Reassemble the cushion retainers, cushions, and trucks. Screw on the kingpin nut and tighten to preferred tightness.

Step 6. Reassemble the wheels, and then test your skate to check if you need to make any adjustments.

References

https://rollerskatenation.com/all-about-plates-plates-101/
https://www.youtube.com/watch?v=-R7DFbapV1g
https://derbylisting.com/word/2017/08/22/roller-skate-maintenance-101-part-one/
https://derbylisting.com/word/2017/09/02/skate-maintenance-101-part-two/

Resources: Replacing the kingpin

https://www.youtube.com/watch?v=qYjCu_iy00Q

[10] See https://www.youtube.com/watch?v=vpqC7skR0oQ for tips on avoiding stripping your kingpin.

5b. Pivot pin and Pivot cup

Pivot pin

What are they?

Pivot pins are located on the truck, and insert into the pivot cup. **Some pivot pins are adjustable, but not all of them**[11]. Adjustable pivot pins allow you to change the length of the pin sitting within the pivot cup. This is important because:

- If the pin is too long and presses against the bottom of the pivot cup, the pivot cup will wear faster and cause damage if the pivot pin grinds against the metal.
- If the pivot pin is too short, it will move vertically when you apply and release pressure on it, which will strain the kingpin (and could break it). This inhibits performance of your plate.

The pivot pin should make light contact with the bottom of the pivot cup, to allow responsiveness of your plate, and a longer life for your skate parts. Adjust your pivot pin after:

- Changing cushions
- Adjusting tension of your trucks
- Over time - as your cushions wear down, the pin will move.

See **'Resources'** below if you want to know how to adjust your pivot pin.

Pivot cup

What are they?

These keep the truck stable, and provide a smooth surface for the truck to "pivot" (rotate) on. They are either plastic, rubber, or a combination of both. The pivot pin on the truck sits in the pivot cup.

Maintenance:

Check for cracking - a cracked pivot cup affects the performance of your trucks. If the cracked pieces fall out, you risk the truck grinding directly on the metal which causes permanent damage to your plate. If your trucks are suddenly more manoeuvrable than normal (without having adjusted your skates), you probably need to replace your pivot cups. **Do this as soon as possible - uncontrolled trucks = broken ankles.**

How to: Change/remove the pivot cup

Step 1. Unscrew the kingpin nut using a crab or Y-tool, and remove cushion retainer, cushion, and truck.

Step 2. Using an allen key, gently pry up the pivot cup until it pops out of the hole.

Step 3. Check the pivot cup for cracks, wearing or damage.

Step 4. Push the pivot cup back into the hole until it pops into place.

[11] Adjustable pivot pins will have a lock nut, and an adjustable bolt. When the truck is removed from the pivot cup, you can clearly see if the pivot pin is adjustable or not.

Step 5. Reassemble the cushion retainers, cushions and trucks. Make sure to test the tightness of your trucks and adjust as needed.

References

https://youtu.be/PB5QicNspGc
https://derbylisting.com/word/2017/08/22/roller-skate-maintenance-101-part-one/

Resources

Adjusting the pivot pin:

https://www.youtube.com/watch?v=2mwjOW_Sy_4
https://youtu.be/kQT6Nd5lN5c
https://youtu.be/PB5QicNspGc

Change/remove the pivot cup:

https://www.youtube.com/watch?v=WEjRMO7DtyU
https://www.youtube.com/watch?v=zQ2Q174Eq1g

5c. Cushions (also called Bushings)

Purpose: Cushions absorb the shock when skating so that your trucks can pivot (turn), and help realign the trucks back to a neutral position.

Material: Cushions are made of either urethane or rubber.

Action: Plates are either single action, or double action. This refers to the number of cushions on the plate on each kingpin. Double action means 1 cushion on each side of the kingpin; this is found on most current skates because it offers better manoeuvrability when skating.

Durometer: Like wheels, cushions are rated against a durometer scale for how 'soft' or 'hard' they are. A low durometer (the lowest is 71) means a softer cushion. A higher durometer (the highest is 98) means a harder cushion. Typically, brands will just label cushions as either 'soft' or 'firm'.

A softer cushion allows easier lateral movement because there is more flex in the cushion, allowing you to lean into your edges. **A firmer cushion allows more "explosive" movement.** Always check which cushions are compatible with the make and model your skates/plate.

Cushion retainer: This is a metal separator which holds your cushions in place.

See Appendix A (p.45) if unsure where the cushion and cushion retainer are on a skate.

When to change cushions: (deciding between 'softer' or 'firmer')
Each skater will have their own preference. Generally, heavier skaters may prefer firmer cushions which support the weight/pressure. Lighter skaters may find firmer cushions hard to manoeuvre, and need a softer cushion that requires less weight/pressure to respond. Newer skaters may prefer softer cushions because they need less force to develop edgework skills.

When to replace cushions
Cushions wear over time, becoming compressed and affecting your turns and gliding. Compressed cushions become brittle and unable to absorb shock. Without shock absorption, the kingpin or truck could break. A compressed cushion forces you to expend more energy trying to skate in a straight line because the cushion no longer directs the truck back to a neutral position.

To spot a compressed cushion, look for:

- Uneven or bulging cushions
- Room to move up and down the kingpin
- The cushion is not positioned right in the truck, or not against the cushion retainer

Tip: Chaya recommends **changing cushions at least every season.**

Note: Cushion retainers are generally low maintenance - just check them when replacing cushions to make sure they are free of rust and cracks.

What you need:

- Skate tool
- New cushions

How To: Replace cushions
Remove wheels first, so you can easily access and see the kingpin nut.

Step 1. Using crab or Y-tool, unscrew the kingpin nut.

Step 2. Remove the kingpin nut, the cushion retainer, and the cushion. If it is a double action plate, remove the truck and the second cushion. (There will be another retainer left on the kingpin).

Step 3. Replace with the new cushions, putting everything back in the correct order. (It is good to keep 1 kingpin and truck assembled to check everything is reassembled correctly).

Step 4. Tighten the kingpin nut as needed, until you reach your preferred tightness (refer to 5d., p.32 for how tight your trucks should be). Keep at least 2 notches visible on the end of the kingpin so that if the nut loosens over time your trucks/wheels do not fall off.

Tip: If you are cleaning cushions (e.g.- after skating in the rain), wash them following the same process as your wheels (1c., p.9). Make sure they are fully dry before reassembling.

References
https://betterbearings.com.au/blogs/news/how-to-be-your-own-skate-technician
https://www.derbywarehouse.com/learningcenter/cushions201.html
https://www.youtube.com/watch?v=_MdnqFmkM8E

Resources: Replacing or changing cushions
https://www.youtube.com/watch?v=eLpPydvzPrs&list=PLIVT2K4H9BHBVmIx3hWOeKxkuWrH7RYqn&index=8

5d. Trucks

What are they?
Trucks are part of your skate, sitting in between the cushions on the kingpin. The wheels are attached to the axles on the truck.

Purpose
The setup of your trucks determines the responsiveness of your skates to your movements, and thus your control. **Think of them like the steering wheel of your skates.** The amount of movement (loose vs tight) in your trucks is referred to as the level of action.

Loose trucks:
- Responsive to turns
- Less stability
- Harder to control at speed

Tight trucks:
- Stability
- Harder to turn

Types of trucks
Most skates come with standard 2-inch trucks. There are options for wider "grind" trucks (2.5-3 inch) for skateparks. Wider trucks are great for doing tricks and offer stability in bowls and verticals. However, they lose manoeuvrability compared to narrower trucks, and can cause wheel clipping if you don't adjust your stance. Trying to grind on a narrower truck often grinds the kingpin, not the actual truck - this shortens the life of your kingpin.

When to adjust trucks
This depends on the skater, as adjusting trucks is about finding what is most comfortable for you and your skating style. Below are things to keep in mind to find the right setting for your trucks.

When laying your skate wheels-up in your lap, move the truck side to side (the same movement they would make when skating). **They should be loose enough to move using your full hand, but not loose enough that you can move them with only your fingers.**

Do your skates feel wobbly? Or hard to turn in? Check the trucks:
- ***Loose trucks = easier to turn, increases 'wobble'***
- ***Tighter trucks = harder to turn, decreases 'wobble'***

You need balance between the two, allowing responsiveness to turns while maintaining stability.

You may need to tighten your trucks as your cushions compress over time. However, if you are having to adjust your trucks to be very loose or very tight, try replacing your cushions instead[12]. For example, if you are:
- *Loosening trucks to increase agility → try softer cushions which will provide more flex*
- *Tightening trucks to increase stability → try harder cushions which will have less flex*

[12] Having very loose or tight trucks is not good - it can damage or break your kingpin or truck.

Important notes:

- Always have at least 1 thread visible on your kingpin so the kingpin nut doesn't fall off.
- Check your plate - do you have a standard kingpin, inverted kingpin, or adjustable pivot pin? This determines how you adjust your trucks.
- If regularly skating outdoors, check your trucks have not loosened from the vibrations.
- If you remove your trucks or cushions (for cleaning, replacing parts, etc.), your skates will always feel different after these adjustments. You can note the length of the kingpin/number of rings visible past the kingpin nut, but they will not feel 100% the same as before.

When to replace trucks

- Weird bends
- Fracture lines and cracks around the pivot pin and ring that sits near the cushions.

These issues are not common, but you want to spot any issues before the truck breaks. Damage is more likely to happen during intense park skating.

What you need:

- A wrench or skate tool (crab or Y-tool)

How To: Adjust trucks

Step 1. Loosen the kingpin locknut (at the base of the kingpin inserting into the plate) using a wrench or crab skate tool. This is for a standard kingpin plate; if you have an inverted kingpin plate, there is no locknut and you can skip this step (see Appendix D p.47 if you are unsure if you have a standard or inverted kingpin plate).

Step 2. Loosen the kingpin nut (at the end of the protruding kingpin) by turning counterclockwise (left). To tighten, turn clockwise (right).

Step 3. Adjust the trucks until you reach your desired tension.

Step 4. Tighten the kingpin locknut to hold the trucks in place - otherwise the trucks will loosen quickly over time from vibrations when skating.

Step 5. If you have an adjustable pivot pin on your truck, watch this video to finish adjusting your trucks.

How To: Replace trucks

Remove wheels first.

Step 1. Using a wrench or skate tool, unscrew the kingpin nut.

Step 2. Remove the kingpin nut, cushion retainer, cushion, and truck. There should be another cushion and cushion retainer left on the kingpin.

Step 3. Thread the new truck onto the kingpin, so that the pivot pin sits in the pivot cup.

- Check the pivot cup is not damaged.
- If you have an adjustable pivot pin on the truck, you need to watch this video.

- Check the cushions are in good condition.

Step 4. Reassemble the cushion, cushion retainer, and kingpin nut onto the kingpin (tip: keep 1 kingpin/truck assembled while you change the other, so that you have a reference for how to reassemble everything.

Step 5. Tighten the kingpin nut. The level of tightness is a personal choice; see the above tips for a starting guide.

Step 6. Repeat for all trucks, then put wheels back on.

References

https://betterbearings.com.au/blogs/news/how-to-be-your-own-skate-technician
https://www.rollergirl.ca/misc/roller-skate-maintenance.html
https://chuffedskates.com/blogs/news/how-to-choose-the-right-roller-skate-truck-for-you#:~:text=WHAT%20ARE%20TRUCKS%3F,you%20can%20adjust%20your%20movements.

Resources

Adjusting trucks:

https://www.youtube.com/watch?v=CmziQy6B1mE

Replacing trucks:

https://www.youtube.com/watch?v=xB9Ly9DtYCY
https://www.youtube.com/watch?v=ySNBkywIIII

6. Boots

Last updated: November 2022

Basic knowledge about boots

Types:

There are several kinds of skate boots:

- **Recreational/Artistic:** generally, the top of the boot sits above the ankle. This supports your ankle, but lowers agility. Popular for free skating and dance/rhythm skating.
- **Jam skates and speed skates:** lightweight boots with a low cut below the ankle. Jam skates will have a toe plug instead of toe stop.
- **Derby:** typically, the top of the boot sits just below the ankle to maximise speed and agility. Derby boots feature extra padding. There are often different levels of play; starting with entry-level boots, and progressing up to advanced competition-level boots.
- **Inline:** these are for rollerblades only - the wheels are arranged in a vertical line (compared to the square configuration of quad roller skates). There are different boot types, however **roller derby is quad skates only**.

Material:

The upper/outside of the boot can be made from:

Vinyl:

- Inexpensive
- Heavily padded
- Little stretch
- No break in period; however, no customised fit
- Good for beginners; recreational skating

Leather:

- Durable
- More comfortable
- Maintain a higher performance withstanding regular use
- Offers stretch; snug fit
- Suitable for more experienced skaters and more ‘intense’ skating

Fibreglass and Carbon fibre:

- Predominantly found in Bont boots
- High performance boots
- Heat moulding

Microfibre and Clarino fibre:

- Vegan boot options
- Have a similar durability and performance level to leather
- Generally fall into the high price range

The *liner* of boots is generally either:

- **Fabric:** moisture wicking (breathable), comfortable.

- **Padded fabric:** common in inexpensive, recreational skates.
- **Leather.** a higher-end option, most comfortable, and will stretch and fit to your foot.

The *outsole* of the boot can be *leather* or *rubber*, and *stitched* or *glued*. Leather is stiffer and of higher quality than rubber, which is more flexible. A stitched outsole will be more durable, as it is more securely attached then a glued outsole.

Tips:

- Keep boots dry and avoid drastic temperature changes[13] (e.g.- avoid storing in a car for days during summer).
- Wipe with a cloth for general care. For more detailed maintenance, treat with leather cleaner/polish to prevent wear of the leather.
- If skates are smelly, spray with fabric disinfectant and leave to air out.
- Look out for:
    - The sole separating from the boot - see 6b (p.42) for re-glueing boots.
    - Excessive wear areas; use hockey tape or toe covers on the toes of skates to protect from wear.

If you skate in the rain, disassemble skates to remove any moisture and dirt. Not doing this shortens the life of your gear, and affects performance. Remove and clean your:

- Wheels
- Bearings
- Cushions
- Trucks
- Toe stops

Leave skate parts to dry completely before reassembling.

References

https://www.derbywarehouse.com/learningcenter/BootBuyingGuide.html
https://rollerskatenation.com/different-types-of-skates/
https://derbylisting.com/word/2017/08/22/roller-skate-maintenance-101-part-one/

[13] Drastic temperature changes will warp the fit of the boot and damage the leather.

Boot sizing

There is no universal sizing - many brands use US Mens, European sizing, or their own sizing chart. It is important to follow the sizing guides for the specific boot (not brand! Sizing can change with new boot models) because your skate size is not transferable. The best way to find your size is to a) try on the boot before buying, b) get fitted at a skate store, or c) trace the outline of your feet and measure the points of maximum length and width[14]. Most skate brands and suppliers have sizing charts on their website for you to compare your measurements to.

The figure below summarises a general sizing conversion chart. Remember: each brand and boot model will vary, as will each person's foot shape. This is a quick tool to direct you, but don't get hung up on the sizing if it isn't working.

SYSTEM		SIZES												
USA	W	5	6	7	8	9	10	11	12	13	14	15	16	17
	M	3	4	5	6	7	8	9	10	11	12	13	14	15
EU		35	36	37	38	39	40	41	42	43	44	45	46	47
UK		2	3	4	5	6	7	8	9	10	11	12	13	14
AU	W	4.5-5	5.5-6	6.5-7	7.5-8	8.5-9	9.5-10	10.5-11	11.5-12	12.5-13	13.5-14	14.5-15	15.5-16	16.5-17
	M	2-2.5	3-3.5	4-4.5	5-5.5	6-6.5	7-7.5	8-8.5	9-9.5	10-10.5	11-11.5	12-12.5	13-13.5	14-14.5
SOLE	INCH	9	9.25	9.5	9.75	10	10.25	10.5	10.75	11	11.25	11.5	11.75	12
	CM	22.8	23.5	24.1	24.8	25.4	26	26.7	27.3	27.9	28.6	29.2	29.8	30.5

When converting to AU sizes, the chart is based on UNISEX styles in Men's (M) USA sizing. Products which are measured in Women's (W) USA sizing expect to be a half size smaller in the AU conversion.

For Example of UNISEX Style:
US-7M = AU-6/6.5M = AU-8.5/9W
US-8M = AU-7/7.5M = AU-9.5/10W
US-9M = AU-8/8.5M = AU-10.5/11W

For Example of WOMEN'S Style:
US-9W = AU-8/8.5W = AU-5.5/6M
US-10W = AU-9/9.5W = AU-6.5/7M
US-11W = AU-10/10.5W = AU-7.5/8M

Women's AU to Women's US - Next size up e.g. W AU-8/8.5 = W US-9
Women's AU to Men's US - 2 Sizes down e.g. AU-8/8.5W = US-6M
Men's AU to Men's US - Next size up e.g. AU-11/11.5M = US-12M
Men's AU to Women's US - 3 Sizes up e.g. AU-11/11.5M = US-14W

[14] Some brands and suppliers have a specific measuring guide to use. Skater HQ has this one.

How to check if boot fits properly

1. **Your toes should just touch the front of the boot, or almost touch it.**

If your heel can slip forwards because you have extra space in your toe-box, the skate is too big and you will be uncomfortable being on your toe stops. However, your toes should not be cramped/curled uncomfortably - this means the skate is too small. The boot should feel snug while allowing you to wiggle your toes up and down.

2. **Check the lacing and fit around the middle of your foot.**

The boot is too narrow if:

- The laces and tongue are bulging.
- There is a lot of pressure on the sides of your foot (it should be snug, not painful).

The boot is too wide if:

- The laces close the gap above the tongue.
- Your foot "rolls" when you shift your weight/push off.

The boot should support and hold your entire foot.

DO NOT SIZE UP IN SKATES TO ACCOMMODATE FOR WIDER FEET.

This provides too much space lengthwise, and causes, at best, blisters, at worst, an injury. Several brands offer narrow or wide boot options, and most brands have specific sizing guides for the boot model - always check these.

3. **Lace up the boots and stand up in a derby stance[15].**

The fit of your skates is made for when you are skating - not standing upright. To properly check the fit around your heel and toes, you need to be in a derby stance.

4. **Wear socks that are the thickness you would wear when skating.**

There is not much gap between skate sizes, so very thin or thick socks affect the sizing.

Important: incorrectly sized skates affect the alignment of weight and pressure points in your foot. Skates are designed so that, when fitted properly, the pressure points in your feet align with the trucks/wheels to optimise power transfer, balance, and responsiveness of your skates when skating[16].

Lacing

If you have the right sized skates and are still experiencing discomfort (e.g.- pain, numbness, tightness or heel slip), try a different lacing technique. See Appendix E (p.48) for lacing options.

Heat moulding: Some higher end derby boots are heat moldable. This allows the boot to be custom-fit to your foot shape for better comfort. It is important to note:

- Not all boots are heat moldable, and some are only mouldable on one side - it damages the boot if you attempt to heat mould a boot that is not. (Check the brand's instructions).

[15] CRDL strongly encourages skaters to **ALWAYS WEAR PROTECTIVE GEAR** if the boot is mounted to a plate.

[16] This is based on standard plate mounting - if you have an alternative plate mount set up, this can vary slightly. However, the boot should still fit the same.

- Heat moulding does not change the length of the boot - it does not fix sizing issues.

If you are looking for information about how to heat mould your boots, Derby Warehouse has a guide for various brands.

References

https://retrorollers.ca/product-sizing/
https://pigeonskates.com/blogs/sizing/how-should-my-roller-skates-fit
https://www.derbywarehouse.com/learningcenter/BootSkateSizingGuide.html
https://bont.com/pages/heat-molding

6a. Leather care

When to perform leather care:

- Leather is cracking or peeling (*before holes appear*)
- Wearing on the toes of the skates

What you need:

- Leather conditioner and cloth (leather boots)
- Hockey tape

Tips:

1. Leather conditioner ≠ leather polish ≠ saddle soap
    - *Leather conditioner:* softens, hydrates and protects leather boots from moisture - increases the life of the boots because flexible leather is less likely to crack/tear.
    - *Leather polish:* gives a shiny finish.
    - *Saddle soap:* deep cleaning of leather - removing stains, marks and scuffs, but dries out the leather. Use a maximum once every 6-12 months.

Takeaway: use leather conditioner for regular maintenance to increase lifespan of the boots. Use saddle soap if the boots need serious love, and always follow up with leather conditioner to rehydrate the leather. Always apply leather polish last.

2. Note: You can use 1-2 pumps of a mild dish soap with warm water instead of leather conditioner - make sure to spot test the leather first.

3. Suede boots are more sensitive to damage - suede cleaning kits should be used. Suede boots are not as common in derby, so they won't be covered here. This link has tips if you need more information.

How To: Leather care

Make sure laces have been removed.

Step 1. Use a damp cloth to gently wipe down the surface of the boot - this removes dust/grime before applying cleaning products.

Step 2. For saddle soap: use a clean *damp* cloth to apply a small amount of saddle soap evenly across the leather. Apply in circular motions, and the soap should absorb into the leather (avoid saturating the leather). Wipe off any excess soap with a clean damp cloth, and wait until the leather has naturally dried completely before applying leather conditioner.

Step 3. For leather conditioner: use a clean *dry* cloth to apply a small amount of leather conditioner. Apply evenly in circular motions, and avoid saturating the leather (this will cause rot). Leave to dry naturally before use.

How to: Hockey tape - apply tape to the toes of boots to protect from scuffing. Reapply as needed.

References

https://skatingmagic.com/how-to-clean-roller-skate-boots/
https://www.leatherhoney.com/blogs/leather-care/leather-polisher-vs-leather-conditioner#:~:text=While%20leather%20polish%20adds%20a,it%20will%20tear%20and%20crack

Resources

https://skatingmagic.com/how-to-clean-roller-skate-boots/

6b. Re-glueing boots

When to glue boots:

- The sole of the skate is lifting away from the base of the plate.
- Holes/tears in leather (i.e.- too late to use leather conditioner).

What you need:

- Glue - Shoe Goo is more flexible and less likely to crack than epoxy glue. Available in black and clear from Rebel Sport and Athlete's Foot.

How To: Glue boots
Make sure the areas you are glueing are dry and free of grime.

Step 1. Apply a small amount to the problem area. Use something you can throw out afterwards (e.g.- a paddle pop stick)[17].

Step 2. Spread the glue evenly in a thin layer to cover the area (the portion of the sole that has separated from the boot, or the hole in the boot).
If the hole has worn all the way through, put some duct tape on the inside of the boot to 'patch' it. Ideally, proper maintenance means holes are avoided.

Step 3. For more damaged boots, you may need to apply a few layers. It is better to apply a few thin layers compared to 1 thick layer. For additional layers, allow 3-4 hours in between applications.

Step 4. Allow 24 hours for the glue to completely set before using the boots.

Resources: Using Shoe Goo https://shop.myrollerderby.com/gb/accessories/400-shoe-goo-shoe-rep

[17] It is safe to use your fingers to apply shoe glue (just dampen them first).

7. When to replace gear

Last updated: November 2022

Eventually, all gear needs replacement. Determining when gear is no longer useful is subjective, however the following tips provide a starting guide.

Replace your gear if:

It is of very poor quality - if you would hesitate to let someone loan your gear because it's poor quality, get rid of it!

Examples:

- Pads that are very worn, have minimal padding left, or missing splints.
- Pads that have been heavily repaired - straps no longer holding in place*, heavily taped down splints, etc.
- Helmets that are damaged, or have had a significant impact hit. This is an immediate safety hazard, and these helmets are not safe to use.
- Chipped or very balding wheels.
- Helmet liners that have separated / falling apart.
- Heavily frayed laces.
- Heavily worn down toe stops.
- Rusted bearings.

* If velcro straps are losing their 'stickiness':

- Check the 'hook' (rough) side is clear of lint / debris - use tweezers or brush with an old toothbrush to remove.
- If the 'loop' (soft) side is not sticking / has pulled apart - trim away the damaged loop, or hold a lighter near the loop (the loop will curl back on itself). Start with the flame further away and slowly move towards the velcro, then remove flame as soon as the loop recurls to avoid damaging/burning the velcro.

8. Ordering Replacement Parts

Last updated: February 2023

When maintaining your gear, you may need to order:

- Cleaning supplies / maintenance tools; e.g.- bearing cleaner, hockey tape.
- Replacement parts; e.g.- toe stops, locknuts, helmet liners.

‘Where can I order from?’
CRDL’s gear librarians are often asked for advice about where to purchase gear and gear parts. As there are no rollerskate-specific stores in Canberra, you may find you need to order online. These are some helpful options:

- Lucky Skates *(Perth)*
- Roller Derby Heaven *(NSW)*
- Bayside Blades *(Melbourne)*

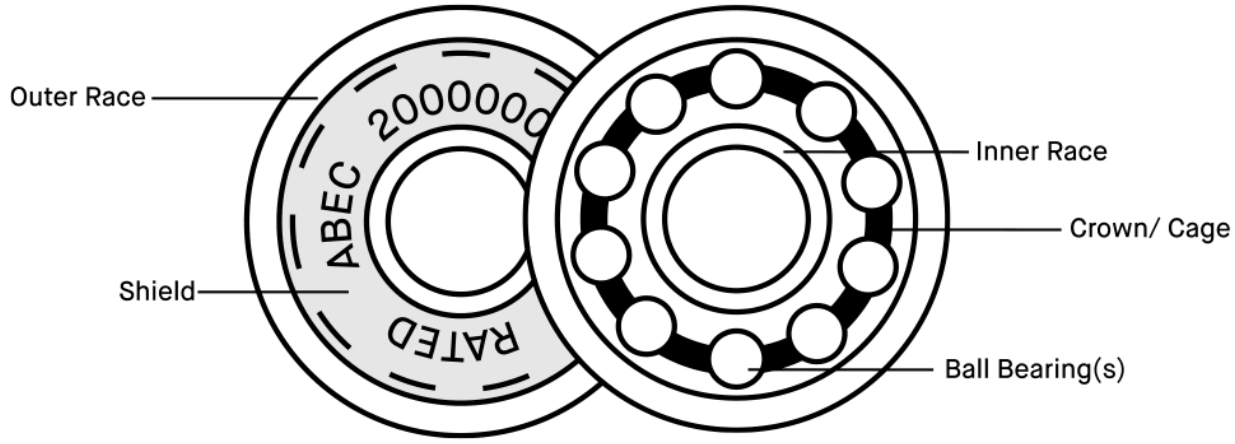
Otherwise, a Google search or reaching out to BUY/SWAP/SELL / social skate groups on Facebook can help direct you to what you are looking for.

Appendix A: Anatomy of a skate

[18]

[18] Image source: https://rollerskatenation.com/anatomy-of-a-roller-skate/

Appendix B: Anatomy of a bearing



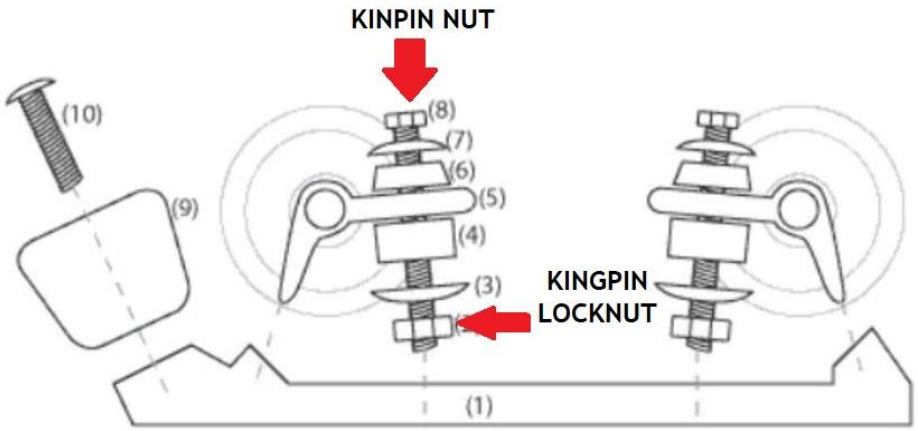
[19]

Appendix C: Ideal toe-stop height

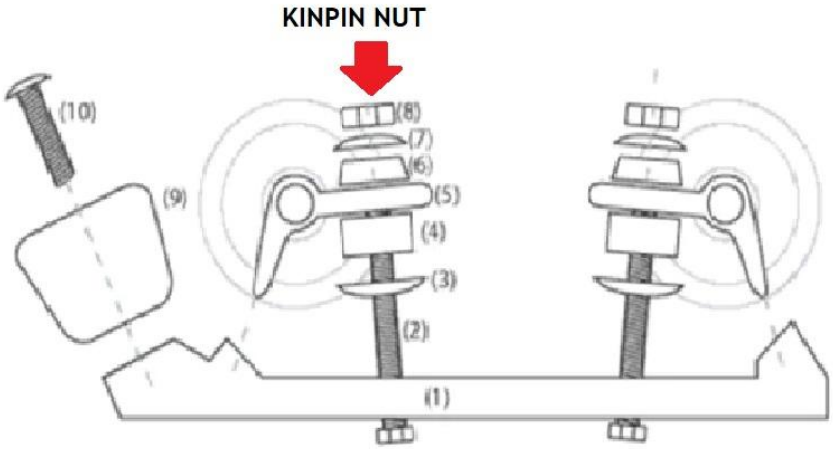
[20]

[19] Image source: https://www.paradeworld.com/uk/news/skateboard-bearing-buyers-guide/
[20] Image source:https://teamrollwithit.com/2016/12/21/toe-stop-install-rotation/

Appendix D: Types of kingpin plates



STANDARD KINGPIN PLATE

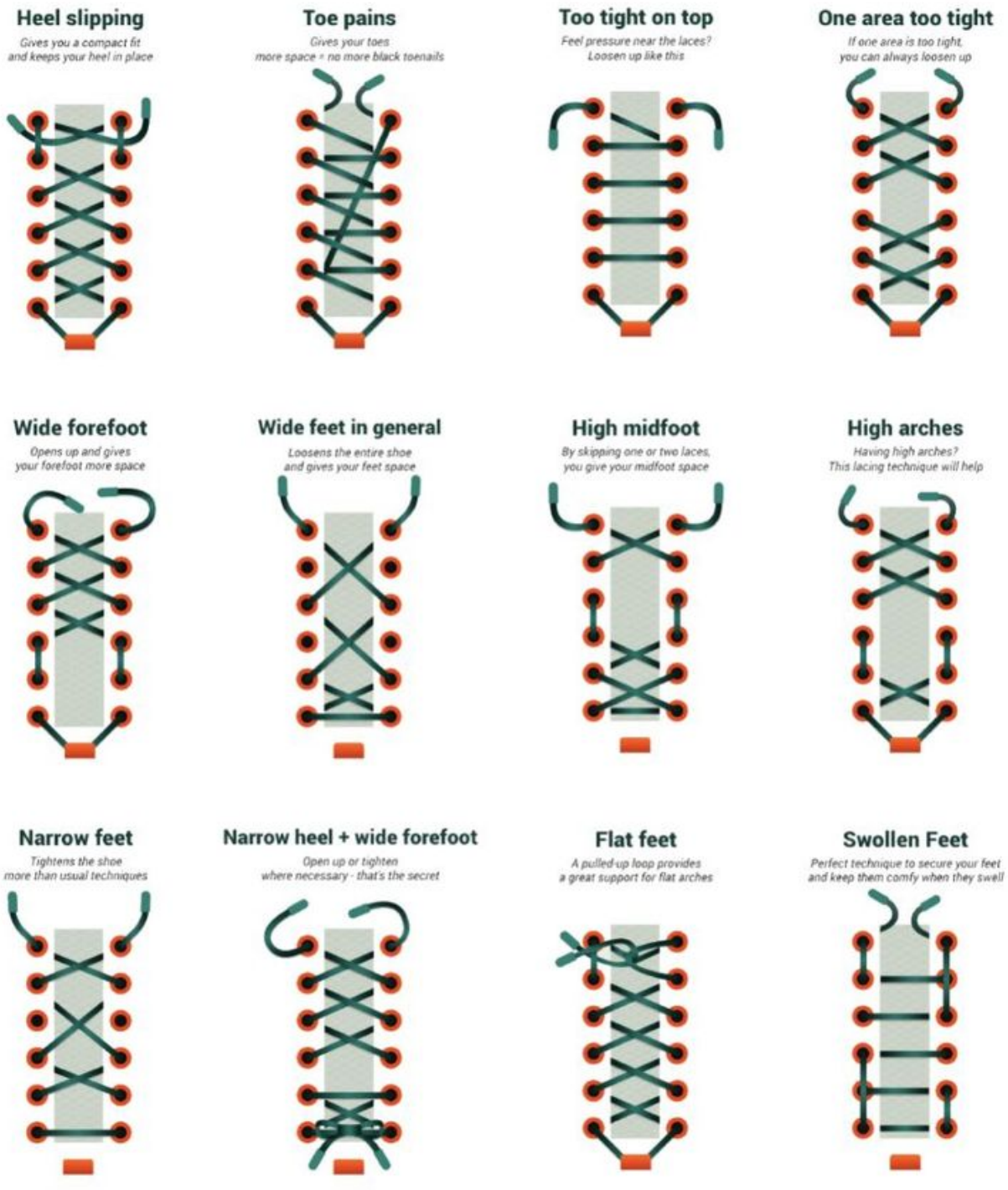


INVERTED KINGPIN PLATE

[21]

[21] Image source: https://www.inlineskates.com/pages/buying-guide-for-roller-skate-trucks

Appendix E: Common lacing options



[22]

[22] Image source: https://imgur.com/gallery/CoRMKD5