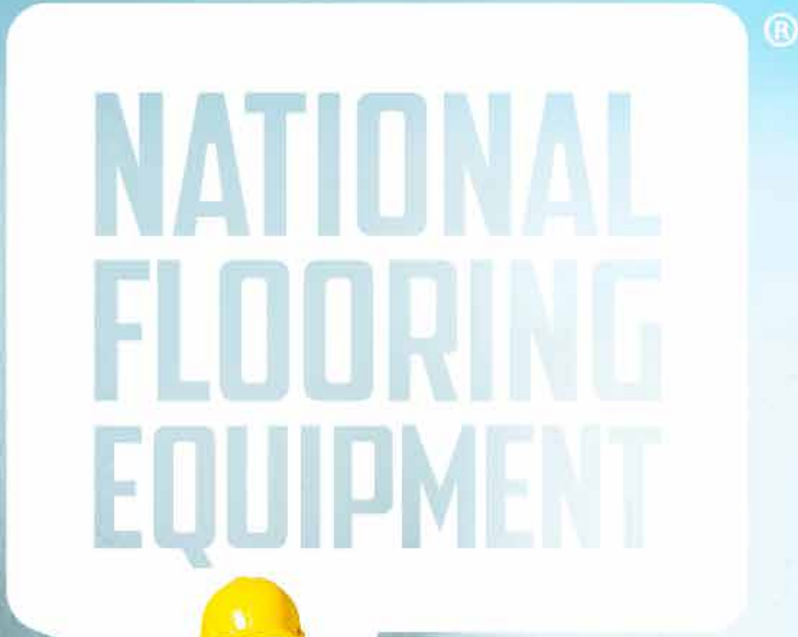


CONCRETE GRINDER

TRAINING GUIDE



Manufactured in the USA Since 1968



Purpose of This Guide

The Concrete Grinder Training Guide is designed to provide you with the knowledge and skills to use and compare concrete grinders. Whether you are a new operator or an experienced professional looking to refine your technique, this guide covers essential operating procedures, maintenance routines, troubleshooting techniques, and a detailed comparison of grinders to help you choose the right equipment for your needs.

Why This Guide Matters

Using the right grinder for the job can make a significant difference in efficiency and results. This guide ensures you can:

- Choose the right grinder for you
- Understand the key differences in specifications and features of various models
- Maximize machine performance through proper use and maintenance
- Improve job site productivity

Who Should Use This Guide?

This guide is intended for:

- Contractors and flooring professionals
- Equipment rental personnel
- Warehouse and facility maintenance teams
- Anyone responsible for flooring removal operations

What You Will Learn

Throughout this guide, you will gain insight into:

- Machine Components & Controls: Understanding the key parts of a concrete grinder.
- Pre-Operation Checklist: Steps to ensure your machine is ready for use.
- Operating Procedures: Best practices for efficient and effective floor grinding.
- Maintenance & Troubleshooting: Tips for keeping your equipment in top condition and resolving common issues.
- Product Comparison: A side-by-side comparison of grinder models, including specifications, features, and ideal applications.

Let's get started!



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BUYER DECISION GUIDE: WHICH GRINDER DO I NEED.

Understanding Your Needs

Before selecting a grinder, consider your surface type, project size, and job conditions:

Surface Condition: Are you removing coatings, leveling, or polishing? Certain grinders are better for certain applications.

Project Size: For smaller spaces, a compact grinder is ideal. Larger commercial jobs require high-powered machines with wider grinding paths.

Job Site Environment: For indoor or low-ventilation spaces, choose electric or battery powered models.

Key Features to Compare

Power Source: Electric grinders for indoors, propane for mobility and outdoor power.

Grinding Width & Disc Configuration: Wider grinding paths speed up work on large surfaces. Single-disc models are best for precision or edge work, while dual- and triple-head grinders cover more area.

Weight & Downforce: Heavier machines remove coatings more effectively, while lighter compact machines are easy to maneuver.

Dust Control: Look for machines with features that are effective in supporting dust control.

Speed & Versatility: Variable speed gives the operator further control while grinding.

Ease of Use: Features like adjustable handles, tool-free disc changes, and ergonomic controls can improve comfort and productivity.

Matching the Grinder to Your Application

For Surface Prep & Leveling: Choose a medium to heavy-duty grinder with adjustable speed.

For Coating & Adhesive Removal: High-downforce grinder with aggressive tooling.

For Polishing & Finishing: Planetary grinder with multiplied heads and fine-grit tooling for smooth finishes.



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GUIDE TO NFE GRINDERS

Helix

16-Inch Passive Planetary Grinder, 115V Single Phase



- A.** Designed for small jobs and tough to reach spaces, this 16-inch planetary grinder provides the perfect profile for new coatings.
- B.** The dual speed motor, built in edge grinder, and additional scarifier tooling makes the Helix the most versatile grinder on the market.
- C.** This modular machine breaks down into several pieces allowing easy transport and access to job sites.
- D.** Pair with the NFE DL2000 Dust Collector (designed to meet OSHA standards).

8274-4

18-Inch Planetary Grinder and Polisher, 115V Single Phase



- A.** This variable speed, planetary grinder achieves a full prep and polish in a compact machine.
- B.** It is well suited for removal of thin set and adhesives, prepping concrete and polishing.
- C.** 18-inch grinding path and Velcro dust guard allow the machine to operate within 1/8" of the wall.
- D.** Pair with the NFE DL2000 Dust Collector (designed to meet OSHA standards).

DL2000

Dust Collector



- A.** Pairs with Helix Planetary Grinder, 8274-4 A95 Shot Blaster, 110-8 Scarifier
- B.** Two-speed motor
- C.** Manual valve for pulsing filter and shaking residual dust
- D.** Endless bagging system for easy cleanup.



GRINDER COMPARISONS (HELIX)

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With so many concrete grinders on the market, it can be tough to know what sets them apart. Below, we've broken down how they stack up.

Compact in size and powerful in performance, the Helix Grinder is built to tackle tough jobs in tight spaces. Whether you're removing coatings, prepping concrete, or smoothing high spots, the Helix delivers pro-grade results with unmatched maneuverability. Its aggressive grinding capability, easy transport design, and user-friendly controls make it the go-to choice for contractors who need serious performance without the bulk.



Feature	National Helix	Husqvarna PG 280 (1.5 HP)	Wolff Mambo EVO	Lavina L16E
Type	Passive Planetary	Single Disc	Single Disc	Planetary
Grinding Width	16 in	11 in	16 in	16 in
Motor Power	1.5 HP	1.5 HP	2 HP	2 HP
Voltage Options	120/230 V	120 V	230 V	115 V
Weight	206 lbs	158 lbs	198 lbs	207 lbs
Speed Settings	Dual-Speed	Single-Speed	Variable Speed	Fixed Speed
Edge Grinding	Yes (Both Sides)	Yes (Convertible)	Yes	Yes
Transport Feature	Modular, Foldable Handle	Lightweight	Foldable Handle	Foldable Handle
Lighting	LED work light	No	No	No
Best For	Coating removal, polishing to 400 grit level	Small to medium concrete areas	Smoothing, Sanding	Coating removal and light grinding



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GRINDER COMPARISONS (8274-4)

The 8274-4 stands in a class of its own. It's the only 110V grinder on the market that delivers performance comparable to a 230V machine—giving you serious power without the need for high-voltage access. It also features a built-in soft start system, reducing initial amp draw for smoother, safer start-ups.



Feature	National 8274-4	Husqvarna PG 450
Type	Planetary grinder w/ three rotating heads	Planetary grinder w/ three rotating heads
Grinding Width	18.5 inches	17.7 inches
Motor Power	3 HP	3 HP
Voltage/Phase	115V/Single-Phase	220-240V/Single-Phase
Amperage Draw	15A or 20A via controller switch	13A
Weight	388 lbs	240.3 lbs
Edge Grinding	Ajustable Velco dust guard allows grinding within 1/8" of walls	Not specified
Transport	Removable handles and weights	Quick-release couplings; foldable chassis for transport
Dimensions	Max: 75" x 20" x 52" Min: 38.5" x 20" x 27.5"	52" x 19" x 45"
Speed Control	Variable speed with soft start	Not specified
Tooling System	Quick-change magnetic tooling; compatible with various diamond tools	EZchange™ Wing system; compatible with ELITE-GRIND™ tools



FAQs

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When Is a Grinder the Right Tool for the Job?

Concrete grinders are ideal when you need clean, controlled surface prep or a polished finish. Here's how to know if it's the right fit:

Production Rate

Need to move fast? Larger grinders cover more ground quickly, while smaller models are great for tight or detailed spaces.

Desired End Result

Grinders are perfect for achieving low to mid Concrete Surface Profiles (CSP 1–3). For higher CSPs, like when prepping for thick coatings, a scarifier or shot blaster may be better.

Removal vs. Prep/Polish

Coating Removal: Use aggressive tooling like PCDs.

Surface Prep: Grinders leave a smooth, even profile ready for coatings.

Polishing: Planetary grinders with fine tooling deliver a high-gloss finish.

There's so many tooling options, where do I start?

PCDs - For tough removals

Diamonds - For easier removals and basic prep/clean of concrete

Polishing Pads - For achieving a high level polish

Can I polish with all grinders?

Yes! All of our grinders can be used to polish, but not all to the same level polish. Determine the level of shine required for the job, then work with your NFE sales person to pick the right tool.

Do I need to use a vacuum with a grinder?

Yes, dust control is essential. Most grinders have integrated vacuum ports, and using a compatible dust extractor helps maintain air quality and meet jobsite safety standards.

How much surface can I cover in a day?

Production rates vary based on machine size and material. Small grinders may cover 200–400 sq. ft/ hour, while large industrial units can exceed 1,000 sq. ft/hour.

Do I need to use water when grinding concrete?

Some grinders can be used wet or dry. Wet grinding reduces dust and keeps tooling cool, but it also requires cleanup. Dry grinding with proper dust collection is more common on indoor jobs.

How often should I replace tooling?

Tool life depends on surface hardness, tooling type, and operator technique. Monitor wear regularly—worn tooling reduces performance and can damage the surface.



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MAINTENANCE CHECKLISTS



Helix Maintenance Checklist



Helix Service & Operations Manual



8274-4 Service & Operations Manual



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TOOLING & ACCESSORIES

Tooling plays a crucial role in concrete surface preparation. Understanding the different types of grinder tooling—and knowing when to use each one—can significantly boost your efficiency on the job. Below is a quick guide to help you choose the right tooling for your grinder:

Choosing the right tool and machine:

Surface prep tools grind and polish concrete while removing coatings like epoxy or glue. Planetary grinders are ideal for polishing and scratch removal, delivering a high gloss finish without coatings.

Key factors in tool selection:

- Bond Hardness
- Diamond grit size
- Diamond concentration
- Segment shape
- Segment pressure (machine weight and segment count)
- Material type (soft, hard or abrasive)
- Desired finish

Rule of thumb:

- The finer the grit, the slower the grinder speed should be.
- If you're producing dust, you're grinding, if not, the machine is drifting over the surface - change the tooling.
- Always clean up! A clean surface prevents scratches from debris and makes it easier to assess your progress.
- Do not polish green concrete - it must be fully cured first.
- More tool segments result in a less aggressive grind due to increased surface area and reduced pressure. Smaller segments create more down-force, leading to a more aggressive cut but faster wear.

What is Bond?

The bond is a metal alloy that wears away to expose new diamonds, Soft bonds wear faster on hard materials, while medium bonds balance durability and speed for concrete. Hard bonds last longer on softer, abrasive surface like asphalt. Selecting the right bond prevents glazing and premature wear, ensuring optimal performance.

PLANETARY GRINDER TOOLING GUIDE

CONCRETE PREP

TOOLING RECOMMENDATIONS

FULL BAR DIAMONDS

Works best in most applications.

HALF BAR DIAMONDS

Use when needing more pressure than Full Bar Diamonds.

SINGLE BAR DIAMONDS

Single bar diamonds should only be used to open up really tough concrete.



FLYING V DIAMONDS

The Flying V metal bond diamonds offer similar head pressure as the full bar diamonds, but increased productivity due to the leading edge of the arrow shape.

PROFILING DIAMONDS

Use profiling diamonds when prepping concrete for polishing.

BRAZED DIAMONDS

Because brazed diamonds expose all diamonds at once, both trapezoid and 5-inch discs are highly efficient. You will go through tooling much quicker than metal bond diamonds.

OPERATION TIPS

Depending on the removal, you may need to adjust the weights

If you're having trouble breaking open the concrete, try 9504-25.

HELIX®

Set your machine to High Speed. If you notice diamonds glazing, decrease to Low Speed.

8274-4

Set your machine to the highest speed. If you notice diamonds glazing, decrease speed incrementally until glazing stops.



FULL BAR DIAMONDS



HALF BAR DIAMONDS



SINGLE BAR DIAMONDS



FLYING V DIAMONDS



PROFILING DIAMONDS



TRAPEZOID BRAZED DIAMONDS



5-INCH DISC BRAZED DIAMONDS

CONCRETE POLISHING

TOOLING RECOMMENDATIONS

PROFILING DIAMONDS

Use profiling diamonds, increasing grit with each pass, when prepping concrete for polishing.

5-INCH POLISHING PADS

After prepping with the profiling diamonds, work through the 5-inch polishing pads, increasing grit after each pass.

The Helix® polishes up to a 400 Grit Finish.

The 8274-4 polishes up to a 1500 Grit Finish.

OPERATION TIPS

SPEED

Set your machine to high speed on both the Helix® and the 8274-4.

HELIX®

Install all weights on your machine.

8274-4

Tilt 2 of your weights forward



GLUE AND MASTIC REMOVAL

TOOLING RECOMMENDATIONS

CARBIDE CHIPS

- Install 2 Carbide Chips on your tooling holder.
- Carbide chips will scrape the glue or mastic off of the concrete without breaking open the concrete.
- Rotate your carbide chip for 4x the use



CARBIDE CHIPS
ON TOOLING HOLDER

OPERATION TIPS

Heat is your enemy when removing glue or mastic.

HELIX®

Attach your tooling directly to the grind and scrape plate and remove the satellites.

Remove weights
Low Speed

8274-4

Tilt all 4 weights back to reduce head pressure and decrease heat.

Low Speed

COATING AND PAINT REMOVAL

TOOLING RECOMMENDATIONS

1/2 ROUND PCDs

Available as 1-Up or 2-Up, PCDs will likely profile the concrete underneath the coating during removal

MICRO PCDs

Available in 2-Up or 4-Up, these Micro PCDs have increased head pressure for difficult removal.

HELIX SCARIFIER TOOLING

Only for Helix®

Helix Scarifier Tooling has TSR teeth and will leave little to no profile on the concrete (depending on hardness) while fully removing the paint or coating.

OPERATION TIPS

Start with 2-Up 1/2 Round PCDs. Switch to other PCDs if in need of higher head pressure.

HELIX®

Avoid aggressive concrete profiling by using Helix Scarifier Tooling.

Install weights
Low Speed

8274-4

Tilt 2 weights forward in most applications. Tilt 4 if additional head pressure is needed.

Low Speed



2-UP MICRO PCDs



4-UP MICRO PCDs



1-UP 1/2 ROUND PCDs



2-UP 1/2 ROUND PCDs



HELIX SCARIFIER
TOOLING

THIN SET REMOVAL

TOOLING RECOMMENDATIONS

1/2 ROUND PCDs

Available as 1-Up or 2-Up, PCDs will likely profile the concrete underneath the coating during removal

CARBIDE CHIPS

Because of the dispersed head pressure, the Carbide Chips will remove the thin set and leave little to no profile on the concrete.

OPERATION TIPS

Set your Helix or 8274-4 to Low Speed

HELIX®

Low Speed

Weights dependent on removal - start with weights removed if trying to avoid profiling.

8274-4

Low Speed

Weights dependent on removal - start with weights tilted back if trying to avoid profiling.



1-UP 1/2 ROUND PCDs



2-UP 1/2 ROUND PCDs



CARBIDE CHIPS

* FLYING V DIAMONDS AND OTHER METAL BOND DIAMONDS ARE ALSO SUITABLE FOR REMOVAL APPLICATIONS

** FOR TOUGH REMOVALS, CONSIDER BOLTING YOUR TOOLING TO YOUR GRINDER USING 73081 OR 73097

Metal Bond Diamonds

Perfect for leveling concrete high spots and profiling the concrete for new coatings, epoxies, and prepping concrete polishing.

Part #	Best Uses	6-Grit	12-Grit	16-Grit	30-Grit	50-Grit	80-Grit	120-Grit
Single Bar Diamonds								
9504-16SB	1 Super Seg, HARD concrete			X				
9504-16MB	1 Super Seg, MEDIUM concrete			X				
9504-25XSB	extremely aggressive - coating removal, for HARD concrete, perfect for breaking surface tension				X			
9504-25MB	1 Super Seg, Medium concrete				X			
Half Bar Diamonds								
9507-6MB	remove thin hard epoxy, paint, adhesive, sealers	X						
9507-16SB	remove thin epoxy, paint, adhesive, sealers, HARD concrete			X				
9507-16MB	remove thin epoxy, paint, adhesive, sealers,			X				
9507-16HB	remove thin epoxy, paint, adhesive, sealers, SOFT concrete			X				
9507-30SB	remove sealers, profile HARD concrete				X			
9507-30MB	remove sealers, prep concrete for polishing				X			
9507-30HB	remove sealers, profile SOFT concrete				X			
9507-50SB	remove sealers, profile HARD concrete					X		
9507-50MB	remove sealers, prep concrete for polishing					X		
9507-50HB	remove sealers, profile SOFT concrete					X		
Full Bar Diamonds								
9508-16SB	remove coatings, profile HARD concrete			X				
9508-16MB	remove epoxy and sealers			X				
9508-30SB	remove coatings, profile HARD concrete				X			
9508-30MB	remove light sealers				X			
9508-50SB	remove coatings, profile HARD concrete					X		
9508-50MB	remove light sealers					X		
Flying V Diamonds								
9509-16SB	prep, aggressive removal, HARD concrete			X				
9509-16MB	prep, aggressive removal			X				
9509-30SB	prep, aggressive removal, HARD concrete				X			
9509-30MB	prep, aggressive removal				X			
Profiling Diamonds								
9510-16MB	prep concrete for polishing			X				
9510-30MB	prep concrete for polishing				X			
9510-50MB	prep concrete for polishing					X		
9510-80MB	prep concrete for polishing						X	
9510-120MB	prep concrete for polishing							X

Brazed Diamonds

Part #		16-Grit	30-Grit	50-Grit	100-Grit
Brazed Trapezoid Diamonds					
9522-16	remove paint, stain, adhesives & heavy sealers	X			
9522-30	prep concrete for reapplication & polishing		X		
9522-50	prep concrete for reapplication & polishing			X	
9522-100	prep concrete for polishing				X
5-inch Brazed Diamonds					
9235-16	remove thin epoxy, paint, stain, adhesives, & heavy sealers	X			
9235-30	remove adhesives, heavy, & light sealers		X		
9235-50	«broom finish» on soft concrete, first stage of polishing			X	
9235-100	«broom finish» on soft concrete, first stage of polishing				X

5-inch Polishing Pads

Used for polishing concrete to various finishes and shines. Resind Bond. Available in escalating grits. These polishing pads are for use with all National planetary grinders.

Part #	50-Grit	100-Grit	200-Grit	400-Grit	800-Grit	1500-Grit	3000-Grit
9267-50	X						
9267-100		X					
9267-200			X				
9267-400				X			
9267-800					X		
9267-1500						X	
9267-3000							X

PCDs & Carbides

Part #	
9554	1-up 1/2 Round remove heavy stock, adhesive, thin set & epoxy
9556	2-up 1/2 Round remove heavy stock, adhesive, thin set & epoxy
9555	2-up Micro remove heavy stock, adhesive, thin set & epoxy
9557	4-up Micro remove heavy stock, adhesive, thin set & epoxy
7268-2	Carbides remove coatings, glue, thin set & mastic
9521	Shoe/Holder Use to attach any PCD tooling to an NFE grinder
9500	Blank fill open spots on tooling plate when in-use
9550	Screw Qty 1 - holds PCD to shoe/holder (Need 2 per shoe)

Attachments & Accessories

Part #	
73081	Helix® Safety Screw for bolting tooling to the Direct Drive Plate
73097	Satellite Safety Screw for bolting tooling to Helix® or 8274-4 satellites
402757	Direct Drive Plate magnetic tooling plate for Helix®

Helix® Scarifier Tooling





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TROUBLESHOOTING & RESOURCES

Where there’s grinding, there’s dust — and lots of it. Keeping a clean work environment is important for safety, as well as a quality finished product.

- Make sure your **grinder is paired with a dust collector that can keep up.**
- In this video, Tom walks you through which dust collectors are best matched with which machines.



The Helix® is the most versatile 110-volt grinder on the market — built for **power, precision, and portability.**

- In this video, we’ll show you how to set up your Helix® for optimal performance when removing thin set.
- We’ll also walk through your **tooling options** and break down which tools are best suited for different applications, so you can get the job done faster and more efficiently.



Planetary or direct drive? Brazed or metal bond diamonds? With so many options out there, it’s no surprise that choosing the right tooling can feel overwhelming.

- In this video, we **walk you through the key differences between each type** and explain when and why you’d use them.
- Our goal is to give you the knowledge and confidence to pick the right setup for your specific jobsite needs.





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TROUBLESHOOTING & RESOURCES

Glazed diamonds happen to everyone. When it inevitably occurs, the key is to restore your diamonds quickly to protect your profit.

- In this post, we'll cover **how to fix glazed diamonds**
- how to avoid glazing in the first place by understanding the common causes.



There's a **few parts that any grinder owner should keep on hand** to minimize job site downtime.

- Keep your crew up and running by making sure you have these wear parts with your grinder, wherever it goes.



Understanding the density of the concrete you're working with is key to choosing the right tooling for your grinder.

- Dave Bigham, National's Director of Global Training, shares a **quick industry trick for testing concrete hardness**
- and explains how the results can guide your tooling selection for maximum efficiency and performance.





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TROUBLESHOOTING & RESOURCES

Visit our YouTube channel & website for more resources.



You made it to the end—well done! By now, you’ve gained a solid understanding of concrete grinders, from choosing the right machine for your application to maintaining performance, selecting tooling, and handling real-world jobsite challenges.

At National Flooring Equipment, we know no two jobs are the same. That’s why we offer a range of machines and tooling options to match your exact surface prep needs. And with this guide in your hands, you’re one step closer to getting the most out of your equipment every time you hit the jobsite.

Keep this guide handy. When you need a quick refresher on tooling, setup, or troubleshooting, it’s here for you. And if questions come up or you need more in-depth support, our team is always ready to help.

Thank you for trusting National Flooring Equipment. We’re proud to be part of your success—and we’re here to help you keep moving forward.

For more materials, resources, and expert support, be sure to visit:



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