

HELIX GRINDER

OPERATING MANUAL



Read Manual Before Operating Machine

403223 Rev D

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Features and Specifications



FEATURES

Floating Tooling Assembly - Allows the cutting head to follow the contour of the surface, providing uniform operation in low spots.

16" Tooling Assembly - Creates a 16" wide cutting path. Rotates 180° for easy tooling changes.

1.5 HP Motor - Draws less than 15 amps at full load.

Edge Grinding - Operates within 1/8" of the wall using either side of the machine.

Dual Speed - Allows the tooling assembly to spin at different speeds.

Floating Dust Skirt - Allows the dust skirt to follow the contour of the surface, providing a virtually dustless operation

Removable Tooling Assembly - Allows for easy access and mobility.

Adjustable Handle - Accommodates wide range of operator heights.

Collapsible Handle Assembly - Allows the handle to collapse to 2/3 of its size for easy handling and transportation.

Product Specifications

Width	Length	Height	Weight	HP	Disk Size
Max: 17.5" (44.5 cm) Min: 16.9" (42.9 cm)	Max: 47" (119.4 cm) Min: 27.9" (70.9 cm)	Max: 47.6" (120.9 cm) Min: 29.4" (74.7 cm)	206 lbs (93.4 kg) with tooling assembly 180 lbs (81.6 kg) without tooling assembly	1.5	16" (40.6 cm)

Machine Variants

Region	Serial Number	Power Input	Motor RPM (High/Low Speed)	Tooling Assembly RPM (High/Low Speed)
Domestic	HELIX-10XXXX	120V / 60 Hz	3200/1800	291/163
	HELIX-12XXXX	120V / 60 Hz	3200/1800	291/163
International	HELIX-28XXXX	100V / 50/60 Hz	2667/1500 (for 50 Hz) 3200/1800 (for 60 Hz)	243/136 (for 50 Hz) 291/163 (for 60 Hz)

Safety

GENERAL RULES FOR SAFE OPERATION

Before use, anyone operating or performing maintenance on this equipment must read and understand this manual, as well as any labels packaged with or attached to the machine and its components. Read the manual carefully to learn equipment applications and limitations, as well as potential hazards associated with this type of equipment. Keep manual near machine at all times. If your manual is lost or damaged, contact National Flooring Equipment (NFE) for a replacement.

Personal

Dress properly and use safety gear.

Do not wear loose clothing; it may be caught in moving parts. Anyone in the work area must wear safety goggles or glasses, hearing protection during extended use, and a dust mask for dusty operations. Hard hats, face shields, safety shoes, etc. should be worn when specified or necessary.

Maintain control; stay alert.

Keep proper footing and balance, and maintain a firm grip. Observe surroundings at all times and use common sense. Do not use when tired, distracted, or under the influence of drugs, alcohol, or any medication that may cause decreased control.

Keep hands away from all moving parts and tooling.

Wear gloves when changing tooling. Remove tooling when machine is not in use and/or lower cutting head to the floor.

Do not force equipment.

Equipment will perform best at the rate for which it was designed. Excessive force only causes operator fatigue, increased wear, and reduced control.

Environment

Avoid use in dangerous environments.

Do not use in rain, damp or wet locations, or in the presence of explosive atmospheres (gaseous fumes, dust, or flammable materials). Remove materials or debris that may be ignited by sparks. Keep work area tidy and well-lit - a cluttered or dark work area may lead to accidents. Extreme heat or cold may affect performance.

Protect others in the work area and be aware of surroundings.

Provide barriers or shields as needed to protect others from debris and machine operation. Children and other bystanders should be kept at a safe distance from the work area to avoid distracting the operator and/or coming into contact with the machine. Operator should be aware of who is around them and their proximity. Support personnel should never stand next to, in front of, or behind the machine while the machine is running. Operator should look behind them before backing up.

Guard against electric shock.

Ensure that machine is connected to a properly grounded outlet. Prevent bodily contact with grounded surfaces, e.g. pipes, radiators, ranges, and refrigerators. When scoring or making cuts, always check the work area for hidden wires or pipes.

Maintenance & Repairs

Begin maintenance work only when the machine is shut down, unplugged, and cooled down.

Use proper cleaning agents.

Ensure that all cleaning rags are fiber-free; do not use any aggressive cleaning products.

Schedule regular maintenance check-ups.

Ensure machine is properly cleaned and serviced. Remove all traces of oil, combustible fuel, or cleaning fluids from the machine and its connections and fittings. Retighten all loose fittings found during maintenance and repair work. Loose or damaged parts should be replaced immediately; use only NFE parts.

Do not weld or flame-cut on the machine during repairs, or make changes to machine without authorization from NFE.

Equipment

Use proper parts and accessories.

Only use NFE-approved or recommended parts and accessories. Using any that are not recommended may be hazardous.

Ensure accessories are properly installed and maintained.

Do not permanently remove a guard or other safety device when installing an accessory or attachment.

Inspect for damaged parts.

Check for misalignment, binding of moving parts, loose fasteners, improper mounting, broken parts, and any other conditions that may affect operation. If abnormal noise or vibration occurs, turn the machine off immediately. Do not use damaged equipment until repaired. Do not use if power switch does not turn machine on and off. For all repairs, insist on only identical NFE replacement parts.

Maintain equipment and labels.

Keep handles dry, clean, and free from oil and grease. Keep cutting edges sharp and clean. Follow instructions for lubricating and changing accessories. Motor and switches should be completely enclosed at all times with no exposed wiring. Inspect cord regularly. Labels carry important information; if unreadable or missing, contact NFE for a free replacement.

Avoid accidental starting; store idle equipment.

When not in use, ensure that the machine is unplugged; do not turn on before plugging in. Store in a dry, secured place. Remove tooling when storing, and keep away from children.



CAUTION! ENSURE PROPER USE OF EXTENSION CORDS. IF AMP DRAW IS HIGHER THAN SHOWN ON TABLE OR CORD IS LONGER THAN 50 FT, SEE AN ELECTRICIAN.

ASSUMPTIONS: 3% ALLOWABLE VOLTAGE DROP, COPPER CONDUCTORS RATED FOR 75°C, 1.25 SAFETY FACTOR, CORD VOLTAGE RATING OF 600VAC, PROPER CORD TYPES (STO, STOW, SOOW).

Amp Draw	Gauge
0-12	14
13-16	12
14-24	10
25-40	8

Safety

GRINDER SAFETY GUIDELINES

Before use, anyone operating this equipment must read and understand these safety instructions.

Grinding

Beware of hidden obtrusions.

Watch out for hidden dangers and protrusions in flooring. Do not use on largely uneven surfaces.

Avoid contact with hot tooling and shroud.

Do not touch the tooling or shroud without proper hand protection. Both become hot during operation and remain hot after stopping the machine.

Use correct tooling and accessories.

Provide barriers or shields as needed to protect others from debris.

Use for correct applications.

Do not force equipment to do heavier duty work than it was made for.

Do not block the machine's air flow.

Blocking ventilation slots or air flow will result in damage to the machine. Leave space for air to flow freely during operation.

Use safety key and wrist wrap during operation.

Loss of control of the grinder could cause damage, injury, or death.

Dust Collection

Use with appropriate dust collecting system.

Do not operate machine designed for use with a dust collector without the dust collector. Ensure dust collector is on and operating properly while grinding.

Use with appropriate dust collection hose.

Do not operate the machine without the hose securely attached to the inlet of the dust collector and the outlet of the grinder. In order to maintain system efficiency, do not use a damaged hose.

Dispose of collected waste.

Do not leave the dust collector bag full of waste. Handle and dispose of bag and waste in accordance with all applicable local, state, and federal regulations. Dispose of waste prior to transport.

Battery (Propane Machines Only)

Remove personal metal items when working with battery.

A battery can produce a short circuit current sufficient enough to weld metal objects, causing severe burns. Be careful to not drop metal tools on the battery, as a spark or short circuit could cause an explosion.

Never smoke or allow a spark or flame near the battery.



WARNING: BE CAUTIOUS WHEN WORKING WITH BATTERY. IF ELECTROLYTIC ACID GETS IN THE EYES, IMMEDIATELY FLUSH OUT WITH COLD, FRESH WATER FOR AT LEAST 10 MINUTES AND GET MEDICAL HELP.



WARNING: GRINDING/CUTTING/DRILLING OF MASONRY, CONCRETE, METAL AND OTHER MATERIALS CAN GENERATE DUST, MISTS AND FUMES CONTAINING CHEMICALS KNOWN TO CAUSE SERIOUS FATAL INJURY OR ILLNESS, SUCH AS RESPIRATORY DISEASE, CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. IF YOU ARE UNFAMILIAR WITH THE RISKS ASSOCIATED WITH THE PARTICULAR MATERIAL BEING CUT, REVIEW THE MATERIAL SAFETY DATA SHEET AND/OR CONSULT YOU EMPLOYER, THE MATERIAL MANUFACTURER/SUPPLIER, GOVERNMENTAL AGENCIES SUCH AS OSHA AND NIOSH AND OTHER AUTHORITIES ON HAZARDOUS MATERIALS. CALIFORNIA AND SOME OTHER AUTHORITIES, FOR INSTANCE, HAVE PUBLISHED LISTS OF SUBSTANCES KNOWN TO CAUSE CANCER, REPRODUCTIVE TOXICITY, OR OTHER HARMFUL EFFECTS. CONTROL DUST, MIST AND FUMES AT THE SOURCE WHERE POSSIBLE. IN THIS REGARD USE GOOD WORK PRACTICES AND FOLLOW THE RECOMMENDATIONS OF THE MANUFACTURER/SUPPLIER, OSHA/NIOSH, AND OCCUPATIONAL AND TRADE ASSOCIATIONS. WHEN THE HAZARDS FROM INHALATION OF DUST, MISTS AND FUMES CANNOT BE ELIMINATED, THE OPERATOR AND ANY BYSTANDERS SHOULD ALWAYS WEAR A RESPIRATOR APPROVED BY OSHA/MSHA FOR THE MATERIAL BEING CUT.

Components and Assembly

LOADING AND UNLOADING

- Always disconnect power, handle, and motor cords before transporting (Figure 1).
- Ensure blanks are installed in magnetic tooling pockets during transport.
- Disassemble machine for easy transport.



FIG. 1

FIG. 2

ASSEMBLING AND DISASSEMBLING MACHINE

The following steps are optional, and will separate the machine into five parts: the weights, base, tooling assembly, handle assembly, and dust skirt. To reassemble the machine, reverse these steps.

Removing the Weights

1. Remove the (4) 5.5 lb (2.5 kg) weights on top by removing the cotter pins that hold them in place. **Note:** *There is another 17 lb (7.7 kg) weight inside the base assembly that can be removed, but the tooling assembly must first be removed.*

Removing the Tooling Assembly

Disconnect machine from power, disconnect the handle cord from the motor cord (Figure 1), and remove the safety key and weights before completing the following steps:

1. If the dust skirt has not already been removed, ensure (4) skirt retainers are in position to keep the dust skirt in place (retainers sticking outward) (Figure 2).
2. Flip base assembly over 180° until it rests on the two handles (Figure 3A).
3. Rotate knob in the center of the tooling assembly counterclockwise to loosen it (Figure 3B); rotate tooling assembly clockwise until the (3) gearbox tabs line up with the (3) gaps in the tooling plate.
4. Remove tooling assembly (Figure 3C); flip base back 180°.



FIG. 3

Separating the Base Assembly

Disconnect machine from power and disconnect the handle cord from the motor cord (Figure 1) before completing the following steps:

1. Unlatch both bear claws while maintaining downward pressure on the lower handle; pull handle assembly away from the base assembly (Figure 4).



FIG. 4

Removing the Dust Skirt

Remove weights and separate base assembly before completing the following steps:

1. Retract the (4) skirt retainers (Figure 2).
2. Slide the dust skirt up and off the base assembly.

To re-attach the dust skirt, there are two alignment tabs (one in the front, one in the back) on the base assembly. Line the notches in the skirt up with these tabs to attach properly. Re-position the skirt retainers to hold the dust skirt in place. Ensure edge grinding guard is located on the left.



FIG. 5

Folding the Handle Assembly

Remove weights and separate base assembly before completing the following steps:

1. Unlatch cam levers on handle, flip handle over the front of the electric box, and then re-engage the cam levers (Figure 5).
2. Pull handle-release lever out and rotate upper handle assembly down so that it folds into the lower handle assembly. It should re-engage with the lower notch when it has reached the correct position (Figure 6).

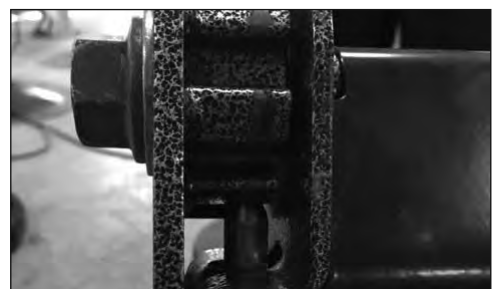


FIG. 6

Components and Assembly



FIG. 7

DUAL SPEED

There is a toggle switch on the motor for switching between speeds 1 and 2 (Figure 7).



WARNING: DO NOT CHANGE SPEED WHILE MACHINE IS RUNNING, AS IT CAN DAMAGE THE MOTOR.



FIG. 8

VACUUM PORT

The machine has a vacuum port at the rear of the machine. Use a vacuum hose that snugly fits either on the outside (2") or the inside (1 3/4") of the port.



WARNING: DO NOT CHANGE TOOLING IMMEDIATELY AFTER OPERATION; TOOLING WILL BE HOT. WEAR GLOVES AND HANDLE TOOLING FROM THE SIDES, KEEPING FINGERS CLEAR.



FIG. 9

ACCESSORY ATTACHMENT

1. Disconnect handle and motor cord (Figure 1) and remove the key; flip base assembly 180° until it rests on the two handles to expose the magnetic tooling holders (Figure 3).
2. Clean foreign material from magnet and tooling pocket prior to tooling installation.
3. Place the tooling segments into two or four of the magnetic pockets (Figure 8). Be careful around pinch points, as the segments will snap into place. *Note: Use blanks in unused magnetic tooling pockets.*
4. For safety purposes, tooling should be attached to the holders using a single #73081 mounting screw (Figure 8). For PCDs, the screw is necessary.

Tooling Setup and Removal

- Remove cotter pin in the shaft in order to remove the magnetic tooling holder (see Tooling Assembly diagram in machine service manual for further instruction).
- For setup, set tooling into recessed area (Figure 9).
- For removal, insert screwdriver into gap and pop tooling out.

Attaching The Velcro Plate Adapter and Pads

The Velcro plate adapter (Figure 10) attaches magnetically to the tooling plate and snaps into place. Brazed diamond and polishing pads are attached to the Velcro adapter plates.

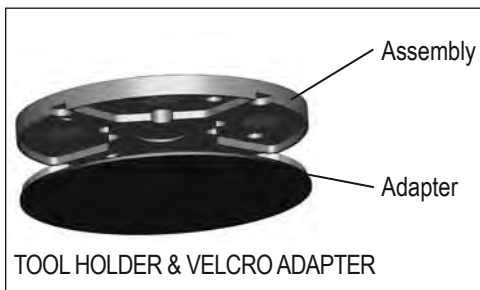


FIG. 10

EDGE GRINDING

Opening the edge grinding guard allows the machine to operate within 1/8" of the wall. To edge grind on the left side of the machine, complete the following steps:

1. Open guard on left side of dust skirt (Figure 11), rotate it 180°, and secure it to the front bracket of the dust skirt.

To edge grind on the right side of the machine, complete the following steps:

1. Open guard on left side of dust skirt (Figure 11).
2. Lift the dust skirt up until it clears the front and back tabs on the shroud.
3. Rotate the dust skirt clockwise until the notches on the skirt line up with the front and back tabs on the shroud.
4. Lower the dust skirt into place.



FIG. 11

PRE-OPERATION SAFETY CHECKS

- Ensure dust collector and hose are properly connected.
- Ensure dust skirt is attached.
- Ensure edge grinding guard is in place.
- Ensure all morflex coupler assemblies and magnetic tooling plates are securely fastened.



WARNING: MAKE SURE YOU ARE USING THE PROPER STYLE OF DUST COLLECTOR FOR WHAT YOU ARE GRINDING, SCRAPING, OR SANDING. FAILURE TO DO SO COULD CAUSE EMISSIONS OF HAZARDOUS PARTICULATES OR EXPLOSION DUE TO FINE DUST (E.G. WOOD SANDING), WHICH IS FLAMMABLE. MAKE SURE THE SYSTEM YOU ARE USING COMPLIES WITH OR EXCEEDS OSHA RECOMMENDED STANDARD. MAKE SURE THE RUBBER DUST GUARD IS COVERING ALL THE WAY TO THE FLOOR SURFACE.

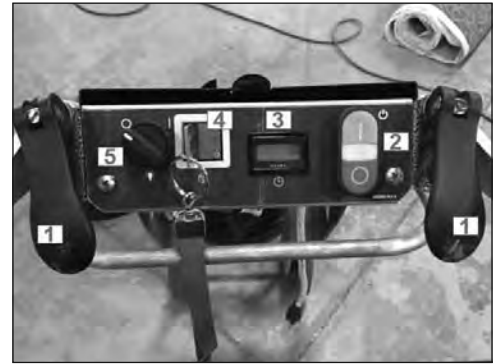


FIG. 12

OPERATING CONTROLS

See Figure 12 for the controller components:

1. Cam levers
2. Motor on/off switch
3. Hour meter
4. Safety key switch
5. Light on/off switch

OPERATING PROCEDURE

1. Ensure key is not in the safety switch before plugging into power source.
2. Plug the motor cord into the handle cord plug (Figure 1).
3. Plug cord into proper size extension cord.
4. Plug extension cord into outlet.
5. Attach safety wrist wrap and insert safety key.



WARNING: DO NOT OPERATE MACHINE WITHOUT FIRST ATTACHING THE SAFETY WRIST WRAP.

6. Push down on handle to relieve pressure from the plate to the floor. If possible, start in a clean floor area.



WARNING: GRINDER MUST BE TOUCHING THE GROUND AT ALL TIMES DURING OPERATION. BASE OF GRINDER SHOULD NEVER BE LIFTED OFF THE GROUND SO THAT TOOLING IS EXPOSED WHEN THE MACHINE IS ON.

7. Press green "Start" button; machine will start. Once started, let plate contact floor with full pressure. *Note: Failure to let plate contact floor with full pressure could cause damage to the motor.*
8. Press red "Off" button or remove the safety key to stop the machine.

Operation



FIG. 13

ACCESSORY SET-UP

When grinding, down pressure relates to two aspects: (1) the amount of weight on the machine, and (2) the surface area the weight is being distributed across.

- If tooling with a smaller segment is used, the amount of down pressure applied at the point of contact is increased.
- Larger segments of tooling will decrease the amount of down pressure.

Down pressure will directly affect production rates and of profile achieved. If more down pressure is desired, insert the tooling segments into two of the four magnetic pockets. Be sure to insert the tooling into the magnetic pockets directly across from one another.



FIG. 14

ADJUSTING THE CAM LEVERS/HANDLE

The cam levers are used to adjust the handle; it has both a coarse and fine adjustment. For coarse adjustment, lift and rotate the entire cam lever 360° (Figure 13), then push the lever back down. For fine adjustment, use a flathead screwdriver and turn the screw 90° at a time (Figure 14).

ADJUSTING THE LIGHT

The light can be tilted up or down by hand for adjustment (Figure 15).



FIG. 15

Troubleshooting Guide

Problem	Solution
Machine is hard to handle	Change to a less aggressive tooling.
	Remove weights.
	Change handle position to gain better leverage.
Debris is coming out from the bottom of the machine	Check dust skirt to make sure it is mounted and secured properly. The bottom edge of the skirt should be touching the floor.
	Remove vacuum hose and check to see if port is plugged.
	Ensure dust collector is working properly.
Blows fuses or circuit breakers	Ensure use of proper extension cord. See Safety section.
	Move to a different outlet on an independent circuit.
	Change to a less aggressive tooling.
	Remove weights.
Motor will not run	Ensure machine is connected to power.
	Check if light on motor is on; if so, change brushes.
	Ensure safety key is properly inserted.
	Ensure handle and motor cords are connected.
Noisy or excessive vibration	Change to a different tooling specific for the job.
	Ensure tooling is properly installed.
Light does not turn on	Ensure light is plugged in (just above where the light is located).

Note: For additional maintenance and repair information, reference this machine's Service Manual.

Warranty

National Flooring Equipment Inc. (referred to as "the Company") warrants that each new unit manufactured by The Company, to be free from defects in material and workmanship in normal use and service for a period of twelve (12) months from date of shipment from the Company. For administrative ease, will honor warranty for a period of fifteen (15) months from date of shipment from the company. Accessories or equipment furnished and installed on the product by the Company but manufactured by others, including but not limited to: engines, motors, electrical components, transmissions etc., shall carry the accessory manufacturers own warranty. Battery warranties are prorated over the warranty period. Customer is responsible for the inspection of equipment / parts upon delivery. Freight damages reported beyond authorized time frame will not be honored.

The Company, at its determination of defect, will repair or replace any product or part deemed to be defective in material or workmanship within specified warranty time period. All product determinations and / or repairs will take place at the designated Company repair facility, or at a certified warranty location designated by the Company. The Company will coordinate and be responsible for all freight expenses associated with valid warranty claims. Freight and shipping expenses associated with abuse or misuse will be back charged to the Distributor/Customer. The Company reserves the right to modify, alter or improve any part / parts without incurring any obligation to replace any part / parts previously sold without such modified, altered or improved part / parts. In no event shall the seller or manufacturer of the product be liable for special, incidental, or consequential damages, including loss of profits, whether or not caused by or resulting from the negligence of seller and / or the manufacturer of the product unless specifically provided herein. This warranty shall not apply to any products or portions there of which have been subjected to abuse, misuse, improper installation or operation, lack of recommended maintenance, electrical failure or abnormal conditions and to products which have been tampered with, altered, modified, repaired, reworked by anyone not approved or authorized by the Company or used in any manner inconsistent with the provisions of the above or any instructions or specifications provided with or for the product. Any and all unauthorized onsite warranty work conducted by unauthorized personnel or any outside person(s), is not covered by the Company unless the work has been pre-authorized by a predetermined manufacturer representative. This excludes wearable parts and/or consumables.

Defective or failed material or equipment shall be held at the purchaser's premises until authorization has been granted by the Company to return or dispose of defective products. Products returned for final inspection must be returned with a manufacturer authorized Return Material Authorization (RMA). Any unauthorized return of equipment will be declined at the dock by the Company. Any non-approved items returned with approved returned items are subject to rejection and will not be credited. Credit will be issued for material found to be defective upon the Company's inspection based on prices at time of purchase.

TO OBTAIN SERVICE CONTACT NATIONAL FLOORING EQUIPMENT, INC. TOLL FREE AT 800-245-0267 FOR A REPAIR AUTHORIZATION NUMBER. COD FREIGHT RETURNS WILL NOT BE ACCEPTED. FREIGHT COLLECT SHIPMENTS WILL NOT BE ACCEPTED. WARRANTY REPAIRS MUST BE ACCOMPANIED BY DATE OF PURCHASE RECEIPT AND A RETURN/REPAIR AUTHORIZATION NUMBER.

RETURN/REPAIR AUTHORIZATION NUMBER: _____

MACHINE SERIAL NUMBER: _____



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