



VFD: INVERTEK OPTIDRIVE IP66 (NEMA 4X)

EQUIPMENT USAGES

- Concrete leveling, grinding and polishing
 - Glue, thinset and mastic removal
 - Terrazzo grinding and polishing
 - Stone grinding and polishing
- Hardwood sanding and refinishing



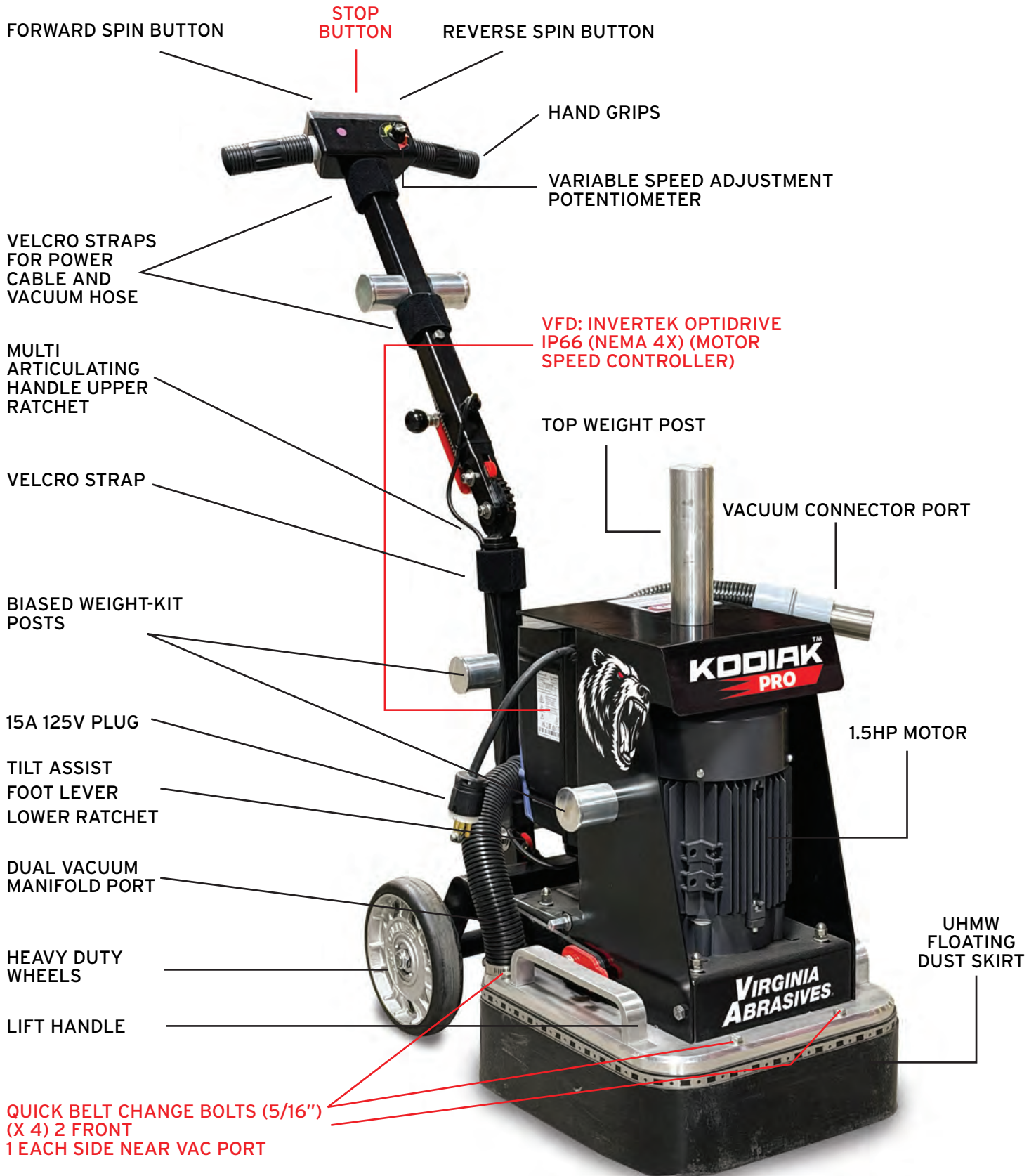
For your personal safety, READ and UNDERSTAND before using.
SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

KODIAK PRO 14 **USER MANUAL**

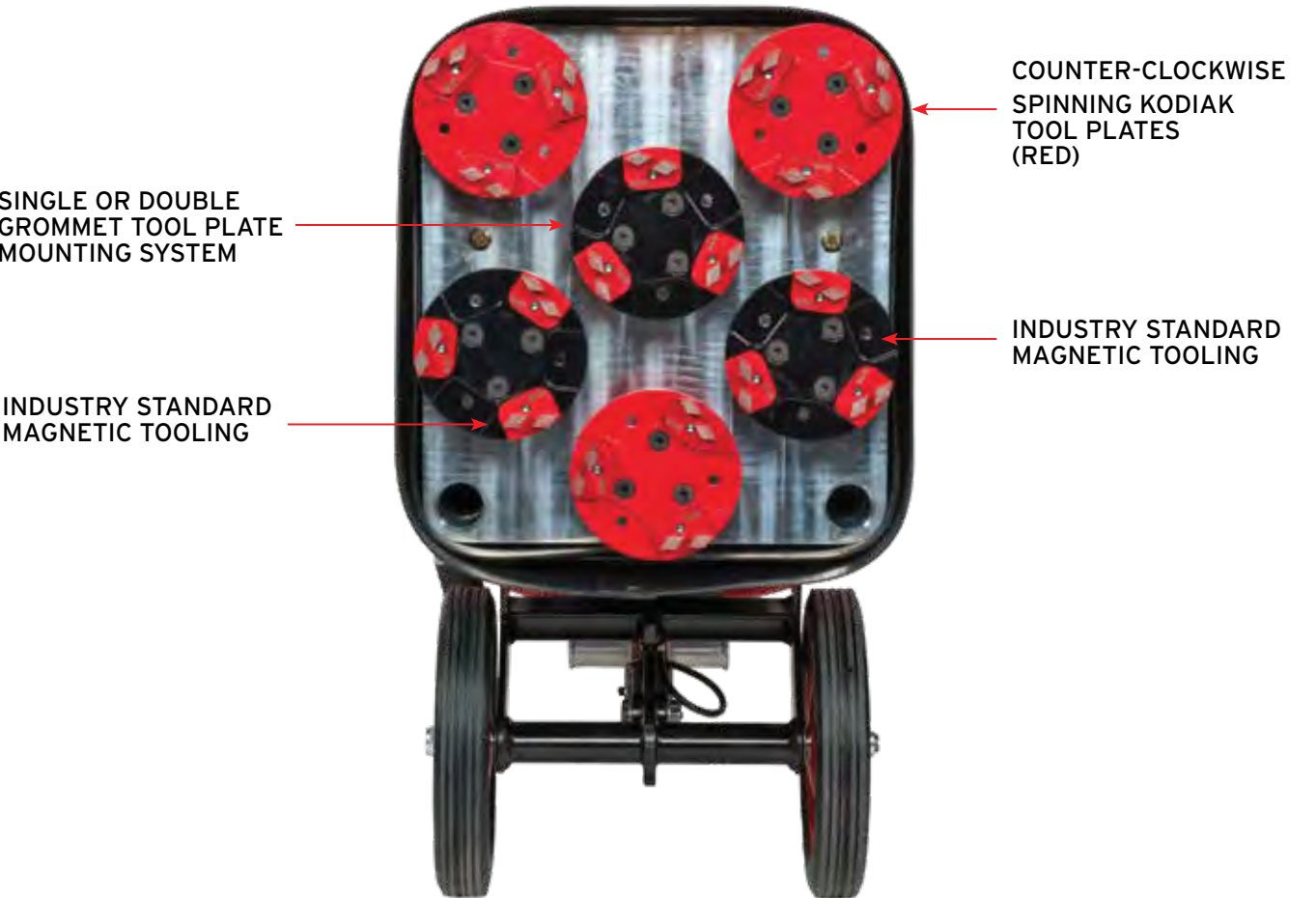
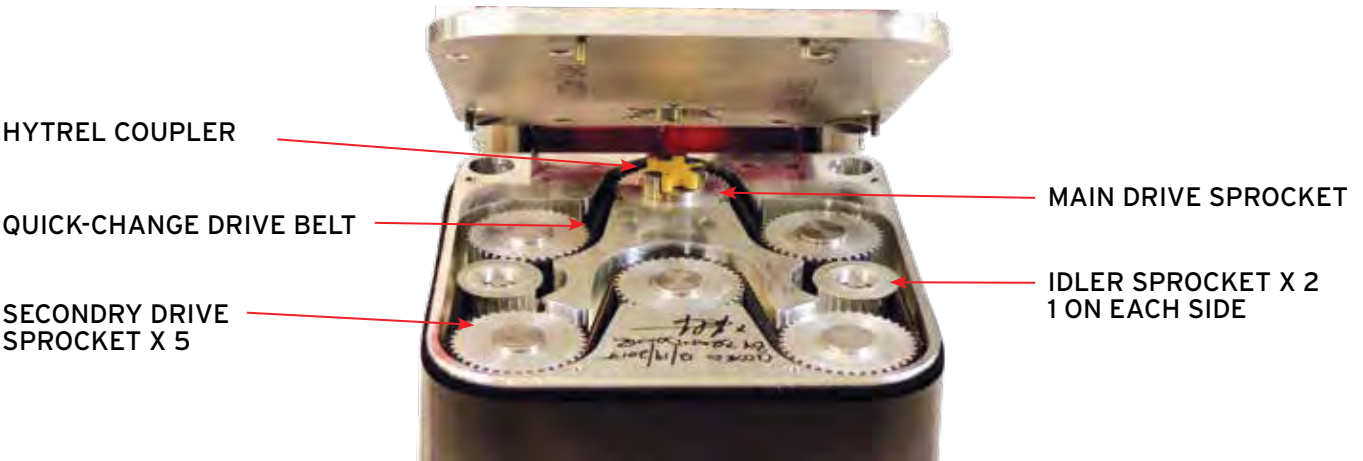
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KODIAK PRO 14 **DIAGRAM**



KODIAK PRO 14 **BOTTOM** DIAGRAM



KODIAK PRO 14 MACHINE SPECIFICATIONS

POWER	15 AMP/120V (Not GFCI Compatible)
MAXIMUM WATTS DRAW	1776
HP	1.5
MACHINE WEIGHT	150 lbs
BIASED WEIGHT KIT MAX WEIGHT	175 lbs
COMBINED WEIGHT	325
DISC SPEED	200-900 rpm
VARIABLE SPEED CONTROL	YES
NUMBER OF GRINDING HEADS	6
COUNTER-ROTATING HEADS	YES
DISK SIZE	5 inches
GRINDING FOOTPRINT	14 inches
QUICK CHANGE TOOLING PLATES	YES
QUICK BELT CHANGING SYSTEM	YES
WET OR DRY GRINDING	YES
UHMW FLOATING DUST SKIRT	YES
MULTI-ARTICULATING HANDLE	YES
RUNS FORWARD OR REVERSE	YES
CAN BE USED AS AN EDGER	YES - grinds to within 1/8 of the edge
DUAL VACUUM MANIFOLDS	YES
TOOLING	
RHINO STYLE TOOLING	YES
STANDARD TRAPEZOID	YES
AVERAGE PRODUCTION RATES (on Medium Hard Concrete)	
EXTREMELY HEAVY REMOVAL	100-150 sq./ft. per hour
HEAVY REMOVAL	200-300 sq./ft. per hour
LIGHT REMOVAL	250-400 sq./ft. per hour
GRINDING AND PROFILING	300-450 sq./ft. per hour
POLISHING	400-650 sq./ft. per hour

KODIAK PRO 14 **SAFETY INSTRUCTIONS**



WARNING! Read and understand all instructions.

Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

SAVE THESE INSTRUCTIONS.



WORK AREA SAFETY

1. Keep your work area clean and well lit. Cluttered floors and dark areas invite accidents.
2. Do not operate equipment in explosive environments, such as in the presence of - flammable liquids, gases or dust. Grinding can create sparks which may ignite the dust or fumes.
3. Keep bystanders, children, pets and visitors away while operating equipment. Distractions can cause you to lose control.
4. Use appropriate Dust Control Vacuum System when dry grinding or sanding.



ELECTRICAL SAFETY

1. Do not abuse the cord. Never use the cord to pull the equipment or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electric shock.
2. Make sure cord is clear of wheels and cutting discs. Do not wrap cord around your arm or wrist. If control of equipment is lost, cord may become wrapped around you and cause personal injury.
3. When operating equipment outside, use an outdoor extension cord marked "W-A" or "W". These cords are rated for outdoor use and reduce the risk of electric shock.
4. Avoid accidental starting. Be sure stop button is depressed before plugging in. Starting equipment with your finger on the start buttons or plugging in equipment that has the buttons depressed invites accidents.
5. USE THE PROPER EXTENSION CORD. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.

FOR THE KODIAK PRO 14 USE 14-GAUGE CORD OR LARGER.



PERSONAL SAFETY

1. **DO NOT** let comfort or familiarity with product (gained from repeated use) replace strict adherence to equipment safety rules. If you use this equipment unsafely or incorrectly, you can suffer serious personal injury.
2. Stay alert, watch what you are doing and use common sense when operating equipment. Do not use equipment while tired or under the influence of drugs, alcohol, or medication. A moment of inattention while operating equipment may result in serious personal injury.
3. Adequate ventilation of your work area is very important when using equipment. Use a dust mask or appropriate respirator.
4. Do not overreach. Always keep proper footing and balance. Proper footing and balance will enable better control of the equipment in unexpected situations.
5. Use safety equipment. Always wear eye protection, dust mask, non-skid safety shoes, hard hat and hearing protection. Ordinary eye or sunglasses are NOT eye protection.
6. **DO NOT** Turn on equipment while the machine is tilted back. Any tooling plates mounted on the machine can come off and cause damage or injury.

KODIAK PRO 14 SAFETY INSTRUCTIONS continued



EQUIPMENT SAFETY AND CARE

1. The equipment is designed to remove excess surface material. To prevent damage to the equipment and/or serious personal injury, beware of protruding objects or other debris on or embedded in the surface being finished.
2. Disconnect the plug from the power source before making any adjustments, changing accessories, or storing equipment. Such preventive safety measures reduce the risk of starting the equipment accidentally.
3. Maintain equipment with care. Keep tools and accessories in good condition. Properly maintained tools with sharp cutting edges are less likely to fail and are easier to control.
4. Check for binding of moving parts, breakage of parts, and any other condition that may affect the equipment's operation. If damaged, have equipment serviced before using. Many accidents are caused by poorly maintained equipment.
5. Use only tools and accessories that are recommended by the manufacturer for your equipment. Tools and accessories that may be suitable for one style of equipment, may become hazardous when used on another style of equipment.
6. Tools and accessories must be rated for at least the speed stated on the equipment serial plate. Tools and other accessories running faster than rated speed can fly apart and cause injury.
7. Due to the dusty nature during use of this equipment, be sure to clean equipment often to remove dust accumulations. Carefully blow the dust out of the motor, VFD and dust covered areas frequently.
8. Always install the dust skirt before operation.
9. Check the tools and accessories carefully for damage before operation. Replace damaged tools and accessories immediately.
10. Hold the equipment firmly with both hands during operation.
11. Do not leave the equipment running unattended.
12. Do not touch the tools immediately after operation; they may be extremely hot and could burn your skin.

SERVICE SAFETY

1. **DO NOT** modify the machine. Modifications will void warranty and could result in unsafe operation of equipment.
2. Equipment service should be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
3. When servicing equipment, use only identical replacement parts. Use of unauthorized parts may create a risk of electric shock or injury.

WARNING:

Misuse or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

SAVE THESE INSTRUCTIONS.

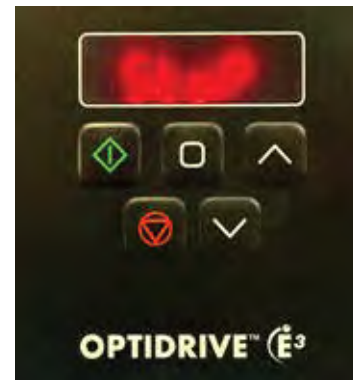


KODIAK PRO 14 OPERATING THE GRINDER

The machine is outfitted with a Variable Frequency Drive (VFD) enabling the user to select the desired operating speed. The equipment can operate on either 50 Hz or 60 Hz frequencies. The VFD will automatically adjust for phase or frequency input which will raise or lower head speed on the machine.

VFD FEATURES:

- Under voltage protection - Over current protection
- 60Hz and 50Hz capability (international)
- 110V
- Soft start
- Speed display
- Load display
- Current limiting



NOTE:

LCD DISPLAY - Shows PAD speed when machine is running and says "STOP" when plugged in but not running.

PRIOR TO USING THE GRINDER

1. Inspect the grinder to make sure all bolts are tight, and that tools are properly mounted.
2. Check that the plug is properly connected to the extension cord and inspect the cord for wear and tear.
3. Make sure that speed dial is turned to its lowest setting.

WARNING:



This will prevent unexpected high speed start up which could cause undesirable marks to surface being finished.



4. Plug the machine in - the VFD LED should read "STOP"

STARTING THE GRINDER

DO NOT LIFT THE EQUIPMENT OFF THE GROUND WHILE STARTING!



Doing so can cause the tools to release from the equipment and cause damage to the surface being finished and surrounding surfaces!



1. With the machine in an upright position, set the articulating handle to the desired position.
2. Check that speed dial is set to slowest speed.
3. Plug the power cable in, making sure that extension cord is not tangled or wrapped around any obstacles.
4. Ensure that the VFD LED reads "STOP"
5. Apply downward pressure on the handle to alleviate some pressure on the tools and press the GREEN start button. (If you want the machine to run in reverse you can push the yellow start button).

KODIAK PRO 14 **OPERATING THE GRINDER** continued

NOTE:

Always use the equipment in the forward rotation mode (green button) unless reverse rotation is needed. This will ensure consistent tool wear.

The use of the equipment in the reverse rotation is only needed when surface being finished is uneven and causes the equipment to pull in an undesired direction or when the tooling is glazed and needs to be re-dressed.

6. Once the equipment is started, gently release the downward pressure and start grinding.

NOTE:

The equipment is designed to rotate the tooling in either the forward direction (green button) or reverse direction (yellow button) depending on operating needs.

ADJUSTING THE SPEED

1. Use the knob, located on the right side of the handle control box to adjust speed of equipment.

STOPPING THE EQUIPMENT

1. To stop the equipment, turn speed control knob to the slowest setting and,
2. push the red stop button on the face of the handle.

ADJUSTING THE HANDLE

1. Make sure machine is turned off, or unplugged.
2. Pull the hand latch or step on foot latch on the handle and move handle up or down to the desired position.

Avoid stepping on or tangling handle control cable when adjusting the handle position.

Make sure that the latch clicks in place when the desired position is achieved.

WARNING:



Failure to check for positive handle latch engagement could result in damage to the equipment or injury to the user as the handle could release unexpectedly when the machine is being operated or tilted back!



USING THE BIASED WEIGHT KIT

The Kodiak line of equipment was designed to be used with our biased weight kit, which allows our machines to be loaded with weights to increase point pressure for very hard floors and to rapidly expose aggregate.

Our unique patented biased weight system uses standard Olympic weight plates, allowing placement on either side of the machine to increase pressure when grinding edges with slab curl and high and low spots.

Weights can also be placed on the handle to alleviate pressure and weight from the machine, enabling the Kodiak to be easily and effectively used for soft & rained out slabs.

For best results and to increase production we highly recommend utilizing weights with your Kodiak Pro grinder.

KODIAK PRO 14 **OPERATING THE GRINDER** continued

KODIAK PRO 14 DOUBLE GROMMET SYSTEM

There are 3 positions controlling tool plate articulation.

NOTE: Drive heads always have 3 grommets in every position.

Check grommets for wear and replace any torn or damaged grommets.

RIGID – This setup has 3 grommets on the drive heads and no grommets on the tool plate drive pins. Rigid position is used for heavy PCD removal of thick coatings such as glue, mastic, thinset, epoxy flake/chip, elastomeric/rubberized parkade coatings etc. Rigid is also used for grinding or sanding a floor or deck flat. When grinding/polishing concrete do not use Rigid position if you are doing cream, salt and pepper or minimum aggregate exposure.

FLEX – This setup requires 3 additional grommets on each tool plate. These grommets are pushed onto each drive pin with the thick side facing up. Flex is used for general grinding and polishing and normal removal of coatings, glue and mastic.

FULL FLEX – This setup requires grommets on the tool plates except they are pushed on with the thin side facing up. This allows for maximum articulation to follow the floor as much as possible. This is used for cream polish, salt and pepper and minimum aggregate exposure on wavy floors. Do not use PCD's in this position as it may result in damage to drive heads, grommets and tool plate drive pins.

KODIAK PRO 14

CHANGING TOOLS AND ACCESSORIES



WARNING:

Always turn grinder off and disconnect power from the machine when performing any operations to the bottom of the machine!



When removing and inserting tool plates or adapter plates, be sure to inspect rubber grommets for signs of wear and replace any damaged grommets.



WARNING:

Using grommets that are damaged or missing can cause unexpected equipment operation and increase the chance of tool plate / adapter plate ejection or violent vibration leading to loss of control of equipment



To change the tools:

1. Turn grinder off, and unplug power
2. Use the weight kit post on the lower part of the handle, placing your foot on the post, to help you tilt the machine back. Do not step on handle release pedal to tilt back as this may disengage the lower ratchet and cause operator to lose balance and cause possible injury.



WARNING:

Do not attempt to replace tools that have recently been in use as they may be hot and could cause injury.



3. Grasp the tool plate firmly with both hands and pull to remove tool plate from grommets
4. Remove the bolt from the back of the tool plate behind each tool to release the tool
5. Hold the replacement tool up against the desired slot on the tool plate and insert/tighten the bolt.

NOTE:

KODIAK PRO 14 tool plates have spaces for up to 6 tools. Using 2 evenly spaced tools per plate is standard configuration.

6. Inspect the grommets to make sure they are not worn or missing
7. Reinsert tool plate into rubber grommets
8. Hold the plate firmly with both hands and jiggle it to make sure its properly attached
9. Repeat with each of the tool plate



WARNING:

Only use tools that have been designed for the machine, and make sure that the same type of tool is being used on all plates/positions.



10. Gently tilt machine back to upright position by lifting the handle and placing your foot on one of the lower handle weight posts.

DO NOT drop the machine on to the floor, as this may cause damage to the floor and/or tooling.

11. Follow the procedure for starting the grinder

PARTS AND ACCESSORIES

A full range of parts and accessories is available on our website.

KODIAK PRO 14 GRINDER MAINTENANCE



WARNING:

Disconnect power before performing any maintenance, cleaning, or repair to your equipment!



GENERAL MAINTENANCE

- When the equipment is not in use, make sure that the adapter plate assemblies have something attached to them to protect the Velcro. Resting the machine directly on unprotected Velcro will crush the fastening material causing the Velcro to become unusable.
- Machine can be stored or transported with tools and tool plates attached or without tool plates thereby sitting on drive head grommets only.

DAILY MAINTENANCE

- Clean the equipment after every job.
- Gently remove dirt and debris from the Velcro hook material using a stiff brush. This will ensure maximum adhesion.
- Check that the handle bolts are tight.
- Vacuum or wipe underside of machine.
- Inspect plug ends for signs of carbon deposits or arcing.
- Check all fasteners and tighten if necessary.
- Using a soft scrub pad, remove any excess dirt build up from the bottom plate and back side of pad drivers.
- Inspect tool plate driver grommets for signs of wear. Replace grommets that show signs of extensive wear.

MONTHLY MAINTENANCE

- Inspect handle wires for damage.
- Blow off the VFD heat sink with compressed air.
- Blow off motor fan with compressed air.
- Check that dust skirt is in good condition if corners are worn through, floating skirt can be flipped. Once both sides are worn through then replace floating skirt.

NOTE:

Skirt can be trimmed to provide a fresh edge as long as it is tall enough to maintain sufficient overlap of fixed dust skirt for adequate dust control.

YEARLY MAINTENANCE

- Check all strain reliefs and make sure they are tight so as to avoid cords being pulled out of the VFD or handle.
- Clean and lubricate wheels.
- Clean and lubricate latch mechanisms.
- Check upper and lower ratchet shoulder bolts and tighten as needed.

KODIAK PRO 14 VFD FAULT CODE MESSAGES

INVERTEK OPTIDRIVE IP66 (NEMA 4X)

ERROR CODE	NO.	DESCRIPTION	SUGGESTED REMEDY
no-FLE	00	No Fault	Not required.
OL-b	01	Brake channel over current	Check external brake resistor condition and connection wiring
OL-	02	Brake resistor overload	The drive has tripped to prevent damage to the brake resistor.
O-1	03	Output Over Current	Instantaneous Over current on the drive output. Excess load or shock load on the motor. NOTE Following a trip, the drive cannot be immediately reset. A delay time is inbuilt, which allows the power components of the drive time to recover to avoid damage.
LT-trP	04	Motor Thermal Overload (I2t)	The drive has tripped after delivering >100% of value in P-08 for a period of time to prevent damage to the motor.
O-volt	06	Over voltage on DC bus	Check the supply voltage is within the allowed tolerance for the drive. If the fault occurs on deceleration or stopping, increase the deceleration time in P-04 or install a suitable brake resistor and activate the dynamic braking function with P-34.
U-volt	07	Under voltage on DC bus	The incoming supply voltage is too low. This trip occurs routinely when power is removed from the drive. If it occurs during running, check the incoming power supply voltage and all components in the power feed line to the drive.
O-t	08	Heatsink over temperature	The drive is too hot. Check the ambient temperature around the drive is within the drive specification. Ensure sufficient cooling air is free to circulate around the drive.
U-t	09	Under temperature	The drive temperature is below the minimum limit and must be increased to operate the drive.
P-def	10	Factory Default parameters loaded	
E-tr IP	11	External trip	E-trip requested on digital input 3. Normally closed contact has opened. If motor thermistor is connected check if the motor is too hot.
bc-055	12	Optibus comms loss	Check communication link between drive and external devices. Make sure each drive in the network has its unique address.
FLE-dc	13	DC bus ripple too high	Check incoming supply phases are all present and balanced.
P-Loss	14	Input phase loss trip	Check incoming power supply phases are present and balanced.
HO-1	15	Output Over Current	Check for short circuits on the motor and connection cable. NOTE Following a trip, the drive cannot be immediately reset. A delay time is inbuilt, which allows the power components of the drive time to recover to avoid damage.
th-FLE	16	Faulty thermistor on heatsink	
data-F	17	Internal memory fault (IO)	Press the stop key. If the fault persists, consult you supplier.
4-20F	18	4-20mA Signal Lost	Check the analog input connection(s).
data-E	19	Internal memory fault (DSP)	Press the stop key. If the fault persists, consult you supplier.

KODIAK PRO 14 VFD FAULT CODE MESSAGES continued

INVERTEK OPTIDRIVE IP66 (NEMA 4X)

ERROR CODE	NO.	DESCRIPTION	SUGGESTED REMEDY
F-PTC	21	Motor PTC thermistor trip	Connected motor thermistor over temperature, check wiring connections and motor.
FAF-F	22	Cooling Fan Fault (IP66 only)	Check / replace the cooling fan.
O-HEAT	23	Drive internal temperature too high	Drive ambient temperature too high, check adequate cooling air is provided.
OUT-F	26	Output Fault	Indicates a fault on the output of the drive, such as one phase missing, motor phase currents not balanced. Check the motor and connections.
ATF-02	41	Autotune Fault	The motor parameters measured through the autotune are not correct. Check the motor cable and connections for continuity. Check all three phases of the motor are present and balanced.
bc-F01	50	Modbus comms loss fault	Check the incoming Modbus RTU connection cable. Check that at least one register is being polled cyclically within the timeout limit set in P-36 Index 3.
bc-F02	51	CAN comms loss trip	Check the incoming CAN connection cable. Check that cyclic communications take place within the timeout limit set in P-36 Index 3.

NOTE

Following an over current or overload trip (1, 3, 4, 15), the drive may not be reset until the reset time delay has elapsed to prevent damage to the drive.

LIMITED EQUIPMENT WARRANTY OF SALE

Virginia Abrasives Corporation warrants that each new unit manufactured by Virginia Abrasives Corporation to be free from defects in material and workmanship in normal use and service for a period of (3) three years from date of shipment to the original owner. Accessories or equipment furnished and installed on the product by Virginia Abrasives Corporation but manufactured by others, including, but not limited to engines, motors, electrical components, transmissions etc., shall carry the accessory manufacturers own warranty.

Virginia Abrasives Corporation will, at its option, repair or replace, at the Virginia Abrasives Corporation factory or at a point designated by Virginia Abrasives Corporation any part which shall appear to the satisfaction of Virginia Abrasives Corporation inspection to have been defective in material or workmanship. Virginia Abrasives Corporation reserves the right to modify, alter and improve any part or parts without incurring any obligation to replace any part or parts previously sold without such modified, altered or improved part or parts.

This warranty is in lieu of and excludes all other warranties, expressed, implied, statutory, or otherwise created under applicable law. In no event shall seller or the 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. In addition, this warranty shall not apply to any products or portions there of which have been subjected to abuse, misuse, improper installation, maintenance, or operation, electrical failure or abnormal conditions and to products which have been tampered with, altered, modified, repaired, reworked by anyone not approved by seller or used in any manner inconsistent with the provisions of the above or any instructions or specifications provided with or for the product.

FORCE MAJEURE

Seller's obligation hereunder are subject to, and Seller shall not be held responsible for, any delay or failure to make delivery of all or any part of the product due to labor difficulties, fires, casualties, accidents, acts of the elements, acts of God, transportation difficulties, delays by a common carrier, inability to obtain product, materials or components or qualified labor sufficient to timely perform part of or all of the obligations contained in these terms and conditions, governmental regulations or actions, strikes, damage to or destruction in whole or part of manufacturing plant, riots, terrorist attacks or incidents, civil commotions, warlike conditions, flood, tidal waves, typhoon, hurricane, earthquake, lightning, explosion or any other causes, contingencies or circumstances within CANADA not subject to the Seller's control which prevent or hinder the manufacture or delivery of the products or make the fulfillment of these terms and conditions impracticable. In the event of the occurrence of any of the foregoing, at the option of Seller, Seller shall be excused from the performance under these Terms and Conditions, or the performance of the Seller shall be correspondingly extended.

This document sets forth the terms and conditions pursuant to which the purchaser ("Purchaser") will purchase and Virginia Abrasives Corporation ("Seller") will sell the products, accessories, attachments (collectively the products ") ordered by the Purchaser. These terms and conditions shall govern and apply to the sale of Seller's products to Purchaser, regardless of any terms and conditions appearing on any purchase order or other forms submitted by Purchaser to Seller, or the inconsistency of any terms therein and herein.

LIABILITY LIMITATIONS

The remedies of the user set forth under provisions of warranty outlined above are the exclusive and total liability of Virginia Abrasives Corporation with the respect to their sale or the equipment and service furnished hereunder, in connection with the performance or breach thereof, or from the sale, delivery, installation, repair or technical direction covered by or furnished under the sale, whether based on contract, warranty, negligence, indemnity, strict liability, or otherwise shall not exceed the purchase price of the unit of equipment upon which such liability is based. Virginia Abrasives Corporation will not in any event be liable to the user, any successors in interest or any beneficiary or assignee relating to this sale for any consequential, incidental, indirect, special or punitive damages arising out of this sale or any breach thereof, or any defects on, or failure of, or malfunction of the equipment under this sale based upon loss of use, lost profits or revenue, interest, lost goodwill, work stoppage, impairment of other goods, loss by reason of shutdown or nonoperation, increased expenses of operation of the equipment, cost of purchase or replacement power of claims of users or customers of the user for service interruption whether or not such loss or damage is based on contract, warranty, negligence, indemnity, strict liability, or otherwise. Virginia Abrasives Corporation reserves the right to modify, alter and improve any part or parts without incurring any obligation to replace any part or parts previously sold without such modified, altered or improved part or parts. No person is authorized to give any other warranty or to assume any additional obligation on Virginia Abrasives Corporation's behalf unless made in writing and signed by an officer of Virginia Abrasives Corporation

TERMS & CONDITIONS

RETURN OF DEFECTIVE PRODUCTS

Defective or failed material shall be held at the Purchaser's premises until authorization has been granted by Seller to return or dispose of Products. Products that are to be returned for final inspection must be returned Freight Prepaid in the most economical way. Credit will be issued for material found to be defective upon Seller's inspection based on prices at time of purchase.



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