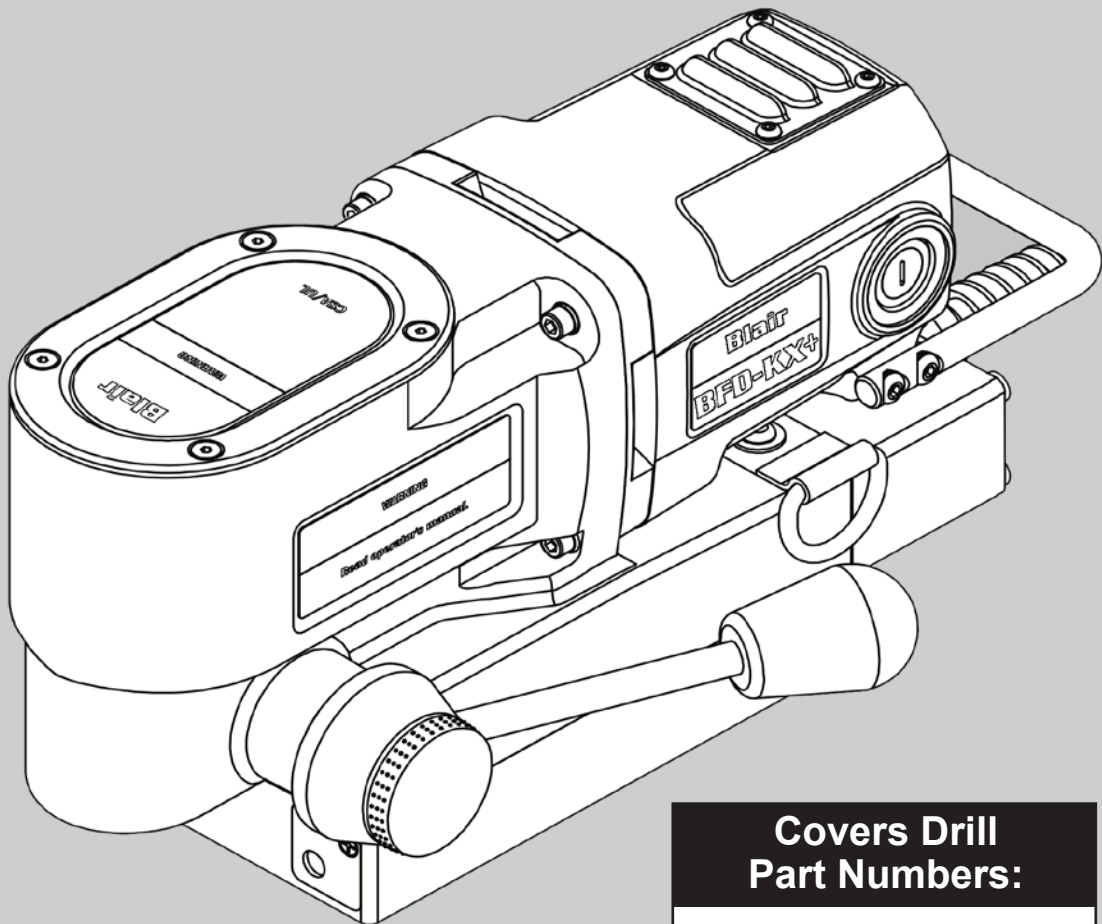




# OPERATOR'S MANUAL

## BFD-KX+ SERIES PORTABLE MAGNETIC DRILL



**Covers Drill  
Part Numbers:**

**0140001**

**FOR USE WITH KARBON X+ CUTTERS**

# BLAIR® PORTABLE MAGNETIC DRILL MODEL BFD-KX+

## Welcome to Blair

Congratulations on your purchase of the Blair Portable Magnetic Drill. Your model is designed to produce superior holes quickly and efficiently. Through constant innovation and development, Blair is committed to provide you with hole producing tools and products to help you be more productive.

Before attempting to operate your new Portable Magnetic Drill, please read all instructions first. These include the Operator's Manual and Warning Label on the unit itself. With proper use, care, and maintenance, your model will provide you with years of effective hole drilling performance. Once again, thank you for selecting our product and welcome to Blair.

## Specifications

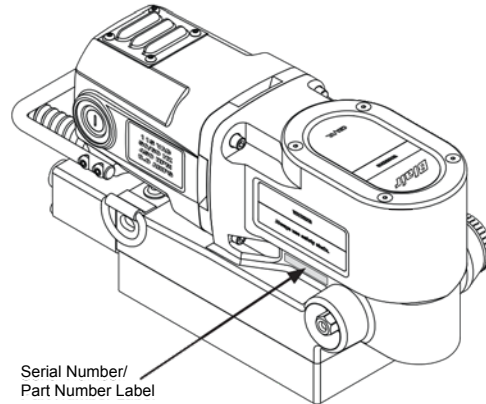
Cutter Type.....Karbon X+  
Hole Capacity.....7/16" to 1-3/8"  
Depth of Cut.....1"  
Motor.....450 RPM, 8A  
Net Weight.....23.4 lbs.

## Noise Specifications

Weighted Sound Pressure.....LpA=88.9dB(A)  
Weighted Sound Pressure Uncertainty.....KpA=3dB(A)  
Weighted Sound Power.....LwA=101.9dB(A)  
Weighted Sound Power Uncertainty.....KwA=101.9dB(A)



Approved Duty Cycle Rated: 2 minutes "ON", 3 Minutes "OFF"



Refer to the Serial/Part number Label on your housing to direct you to the correct breakdown.

## Part Number

0140001 BFD-KX+ 115V

## UNPACKING YOUR NEW DRILL

1. Open shipping carton and remove the literature and hardware packages.
2. **Read and Follow All Instructions** before attempting to operate your new Magnetic Drill.
3. Please visit [blairequipment.com](http://blairequipment.com) to register your unit now. It is important that Blair Equipment Company has a record of product ownership.
4. Open hardware package and check contents.
  - 17059 Safety Strap
  - 08511 Feed Handle
  - 08512 Feed Handle
  - 17021 Oval Knob
  - 11750 Stick Lube
5. Using the rear handle of Magnetic Drill, lift unit out of the shipping case.
6. Remove all packing and securing material from the drill unit.
7. Screw the Knob into the Feed Handle and then screw Handle into the Hub Assembly. Do not over tighten or may strip the knobs.
8. Your Magnetic Drill was factory adjusted prior to shipping. Check to make sure that all motor mount screws and magnet mounting screws are snug and have not vibrated loose in transit.
9. Your new Low profile Magnetic Drill uses Blair Karbon X+ Cutters.

**Reread Safety Warnings listed in the Operator's Manual and on the drill unit to avoid injury. Follow operating procedures.**

## INDEX

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# WARNING



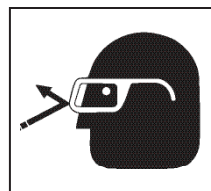
Cutters are sharp. Wear gloves when installing or removing cutter from arbor. Do not grab a rotating cutter.



To prevent electric shock, do not use power tools near wet areas, or where power tool may become wet.



Do not stare at operating light.



Always wear eye protection while using cutting tools, or in the vicinity of cutting.



The slug is ejected at the end of the cut. Do not aim cutter or arbor so that ejected slug may hit someone around, or below you.

## IMPORTANT SAFETY INSTRUCTIONS



### WARNING:

Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

### 1. Work Area Safety

- Keep your work area clean and well lit. *Cluttered or dark areas invite accidents.*
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. *Power tools create sparks which may ignite the dust or fumes.*
- Keep children and bystanders away while operating a power tool. *Distractions can cause you to lose control.*

### 2. Electrical Safety

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. *Unmodified plugs and matching outlets will reduce risk of electrical shock.*
- Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. *There is an increased risk of electric shock if your body is earthed or grounded.*
- Do not expose power tools to rain or wet conditions. *Water entering a power tool will increase the risk of electric shock.*
- Do not abuse the cord. Never use the cord for carrying or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. *Damaged or entangled cords increase the risk of electric shock.*
- When operating a power tool outdoors, use an outdoor extension cord suitable for outdoor use. *Use of cord suitable for outdoor use reduces the risk of electric shock.*
- If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply. *Use of an RCD reduces the risk of electric shock.*

### 3. Personal Safety

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol, or medication. *A moment of inattention while operating power tools may result in serious personal injury.*
- Use personal protective equipment. Always wear eye protection. *Protective equipment such as dust mask, non-skid shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.*

- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. *Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.*
- Remove any adjusting keys or wrench before turning the power tool on. *A wrench or a key that is left attached to a rotating part of the power tool may result in personal injury.*
- Do not overreach. Keep proper footing and balance at all times. *This enables better control of the power tool in unexpected situations.*
- Dress properly. Do not wear loose clothing or jewelry. Keep your hair and clothing away from moving parts. *Loose clothes, jewelry or long hair can be caught in moving parts.*
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. *Use of dust collection can reduce dust-related hazards.*
- Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles. *A careless action can cause severe injury within a fraction of a second.*
- Always use safety chain. *Mounting can release.*

### 4. Power Tool Use and Care

- Do not force the power tool. Use the correct power tool for your application. *The correct power tool will do the job better and safer at the rate for which it is designed.*
- Do not use the power tool if the switch does not turn it on or off. *Any power tool that cannot be controlled with the switch is dangerous and must be repaired.*
- Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories or storing power tools. *Such preventative safety measures reduce the risk of starting the tool accidentally.*  
*(Continued on page 4)*

**Save all warnings and instructions for future reference.**

# IMPORTANT SAFETY INSTRUCTIONS

- d) Store idle power tools out of reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. *Power tools are dangerous in the hands of untrained users.*
- e) Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. *Many accidents are caused by poorly maintained power tools.*
- f) Keep cutting tools sharp and clean. *Proper maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.*
- g) Use the power tool, accessories and tool bits etc. in accordance with the instructions, taking into account the working conditions and the work to be performed. *Use of the power till for operations different from those intended could result in a hazardous situation.*
- h) Keep handles and grasping surfaces, clean and free from oil and grease. *Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.*

## 5. Service

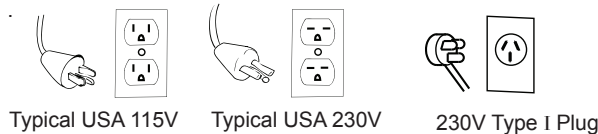
- a) Have your power tool serviced by a qualified repair person using only identical replacement parts. *This will ensure that the safety of the power tool is maintained.*

## ADDITIONAL SAFETY INSTRUCTIONS

### Safe Electrical Connection

Your Drill is rated for use on 115VAC or 230V at 50-60Hz. Do not attempt to use drill on power sources rated other than this.

### Plugs and Receptacles



Wet electrical connections are shock hazards. To prevent the cutting fluid from traveling along the cord and contacting the plug or power outlet, tie a drip loop as shown. Also elevate extension cords or gang box connections.



### Extension Cords

Use only 3-wire extension cords that have a 3-prong grounding type plug and 3-pole receptacles that accept the tool's plug. Replace or repair damaged cords. Make sure the conductor size is large enough to prevent excessive voltage drop which will cause loss of power and possible motor damage.

| LENGTH OF CORD, FEET | RECOMMENDED WIRE GAUGE     | RECOMMENDED WIRE GAUGE   |
|----------------------|----------------------------|--------------------------|
|                      | 115V MOTOR<br>10 - 12 AMPS | 230V MOTOR<br>5 - 6 AMPS |
| Up to 25             | 16                         | 18                       |
| 26 - 50              | 14                         | 18                       |
| 51 - 100             | 10                         | 16                       |
| 101 - 200            | 8                          | 14                       |
| 201 - 300            | 6                          | 12                       |
| 301 - 500            | 4                          | 10                       |

### Outdoor Extension Cord Use

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

### Additional Safety Precautions

Arbor and cutter should never be used as a handhold or handle. Keep hands and clothing away from all moving parts. Do not use Blair Cutters where ejected slug might cause injury (slug ejected at end of cut). Also, adhere to all operating instructions. Do not drill through any surface that may contain live electrical wiring. Drilling into a live wire could cause exposed metal parts of the drill to be made live. Remove chips wrapped around cutter and arbor after each hole. With motor off and power disconnected, grasp chips with leather gloved hand or pliers and pull while rotating counterclockwise. Should the cutter become jammed in the work, stop the unit immediately to prevent personal injury. Disconnect the drill from the power supply and loosen jammed cutter by turning the arbor counterclockwise. Never attempt to free the jammed cutter by starting the motor. Service at authorized repair center only.

### Operating Near Welding Equipment

**DO NOT** operate this unit on the same work surface that welding is being performed on. Severe damage to the unit, particularly the power cord, could occur. This could also result in personal injury to the operator.

### Circuit Breaker (If Applicable)

Changing of the circuit breaker to a higher amp rated breaker, or bypassing the circuit breaker is not recommended and will void product warranty.

### Circuit Breaker Operation (If Applicable)

The circuit breaker is a thermal breaker. When it reaches the higher temperature rating it will trip and cause the unit to shut down. This is a protective device and can be reset after 5 to 10 minutes. To reset the breaker, press the breaker button back in. If it does not reset, let the unit cool a little longer until you can push the button in and it stays in position.

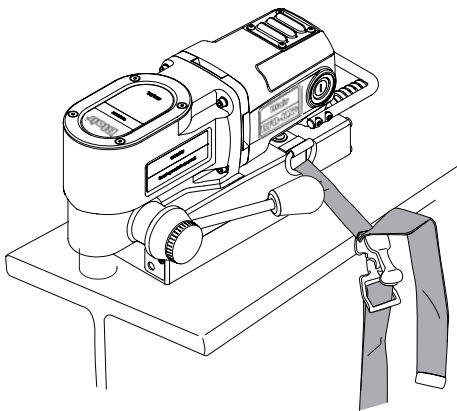
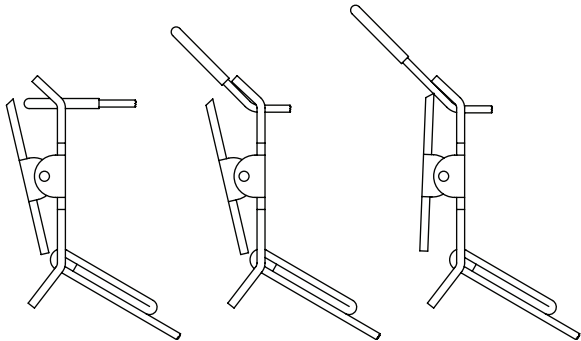
**Save all warnings and instructions for future reference.**

# OPERATING INSTRUCTIONS

1. Place drill on material (at least 3/8" thick) and locate for drilling hole.

2. Press magnet switch to "ON"

3. Thread safety strap through opening between motor and drill housing. Ensure that strap does not interfere with operation of feed handle. Insert tab of strap into buckle. Cinch strap tight to material and drill housing. Check for slack and adjust as needed.



## CAUTION:

- Keep strap clear of cutting area, chips, and rough edges on material.
- Inspect strap periodically for fraying and damage. Do not use a damaged safety strap.

4. Apply liberal amount of cutting fluid or stick lubricant to cutter. Additional lubrication may be required to finish cut.

5. Make certain that cutter is clear of workpiece and turn motor ON by pressing the motor START button.

6. Feed Cutter slowly into workpiece. Only after cutting path is established to a depth of about 1/16" can additional force be applied to feed handles. Ease up on feed pressure as cutter starts breaking through

**CAUTION:** Do not over-feed cutter. Excessive feed pressure may cause the magnet to break free from material.

## **DRILLING MULTIPLE LAYER MATERIALS:**

Second layer penetration may be difficult. Slight additional feed pressure may be required (avoid over-feed as noted above).

If unable to penetrate second layer, withdraw cutter from material ejecting slug and clean away any remaining chips. Feed cutter in hole and continue cut.

- Turn motor off when cut is finished.
- Fully retract cutter from material, ejecting the slug.
- Remove safety strap.

7. Turn magnet switch to "OFF" position.

**CAUTION:** Retain firm hold on drill to prevent dropping.

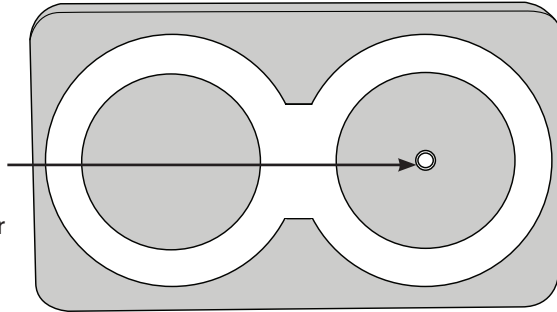
Cutter Inside Diameter may collect chips, restricting depth of cut. Cutter should be frequently inspected and any chips or debris removed.

## **OPTIONAL FEED METHODS:**

- 1/2" Box Wrench
- Ratchet with 1/2" Socket
- NO PLIERS OR OPEN END WRENCH (They will damage feed handle mounting surfaces)

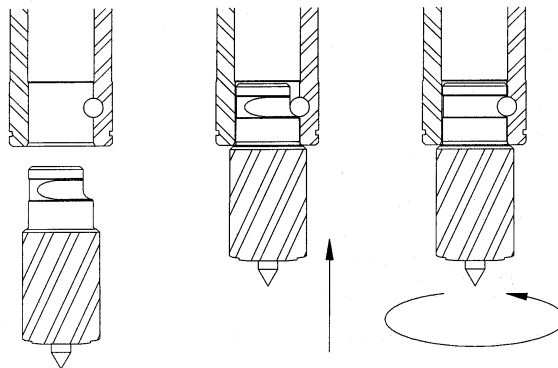
## SAFETY SWITCH

**NOTE:** The Safety Switch located in the base of the unit shuts off the motor when the unit lifts. The magnet will stay engaged until you turn off the magnet. It is important to keep this area clean and free from chips. Periodically check this switch for proper function and if for some reason it is not working properly, send the unit to an authorized repair center for service.

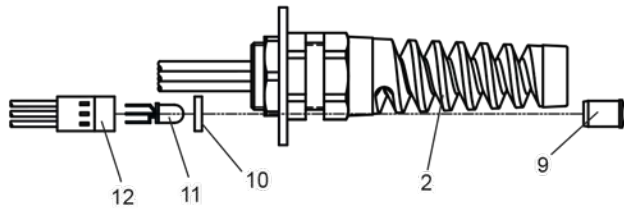
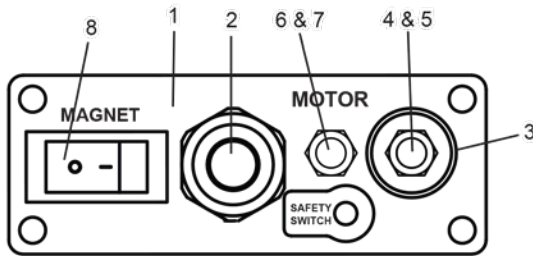


## Karbon X+ CUTTER INSTALLATION

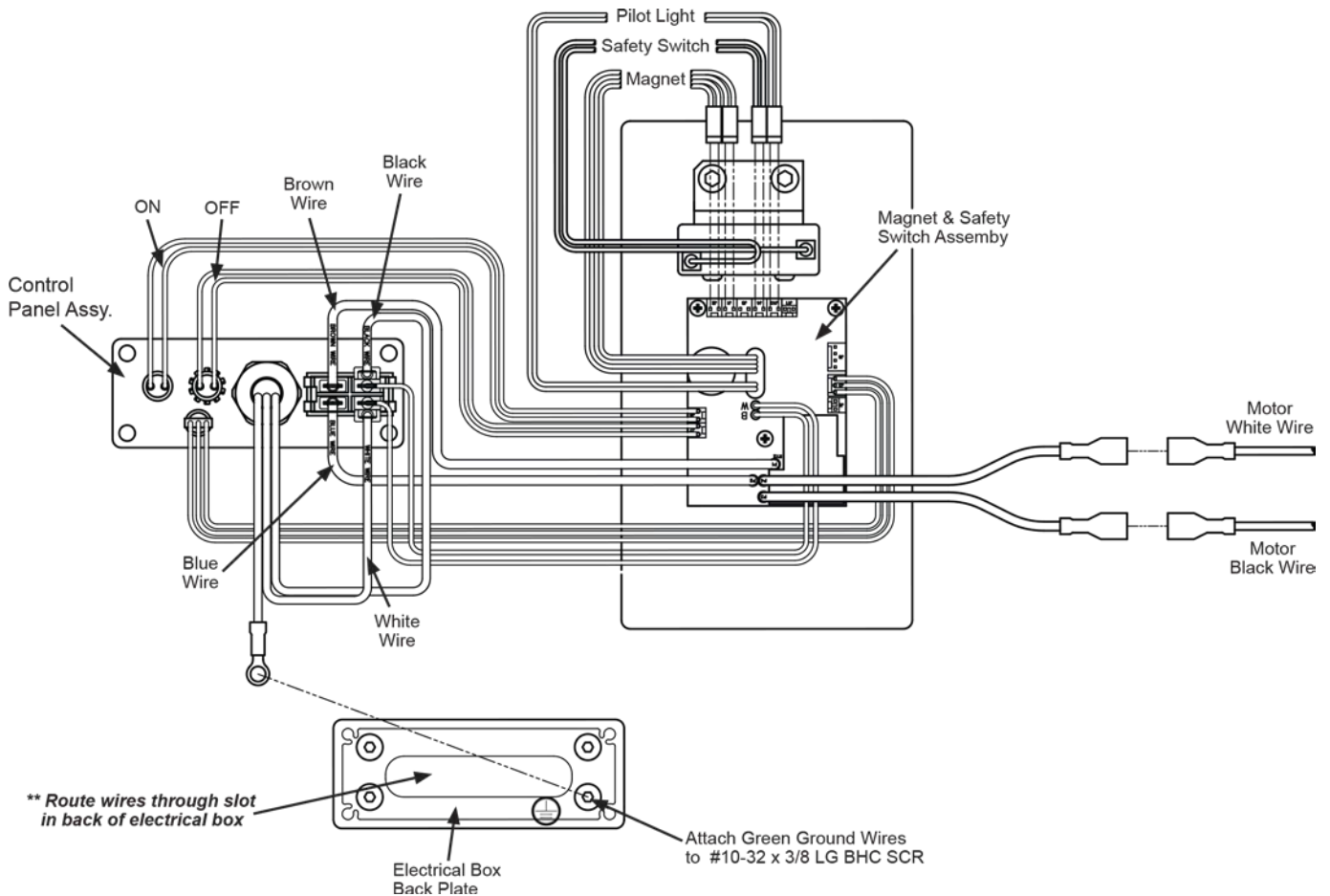
1. Disconnect machine from power source.
2. Insert pilot into cutter.
3. Align flat on shank with pin in spindle.
4. Insert cutter into spindle.
5. Give cutter 1/4 turn in opposite direction of flutes.

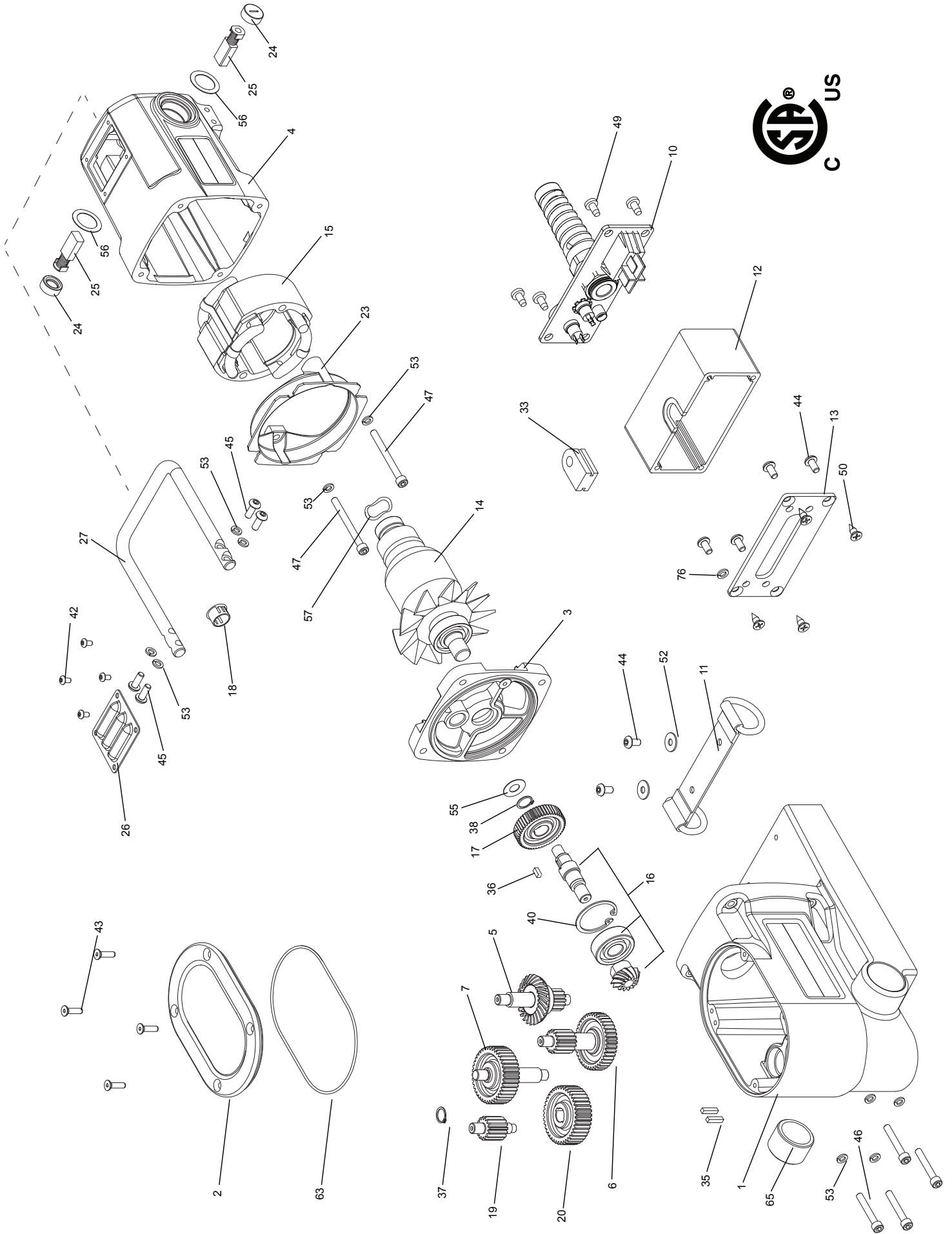


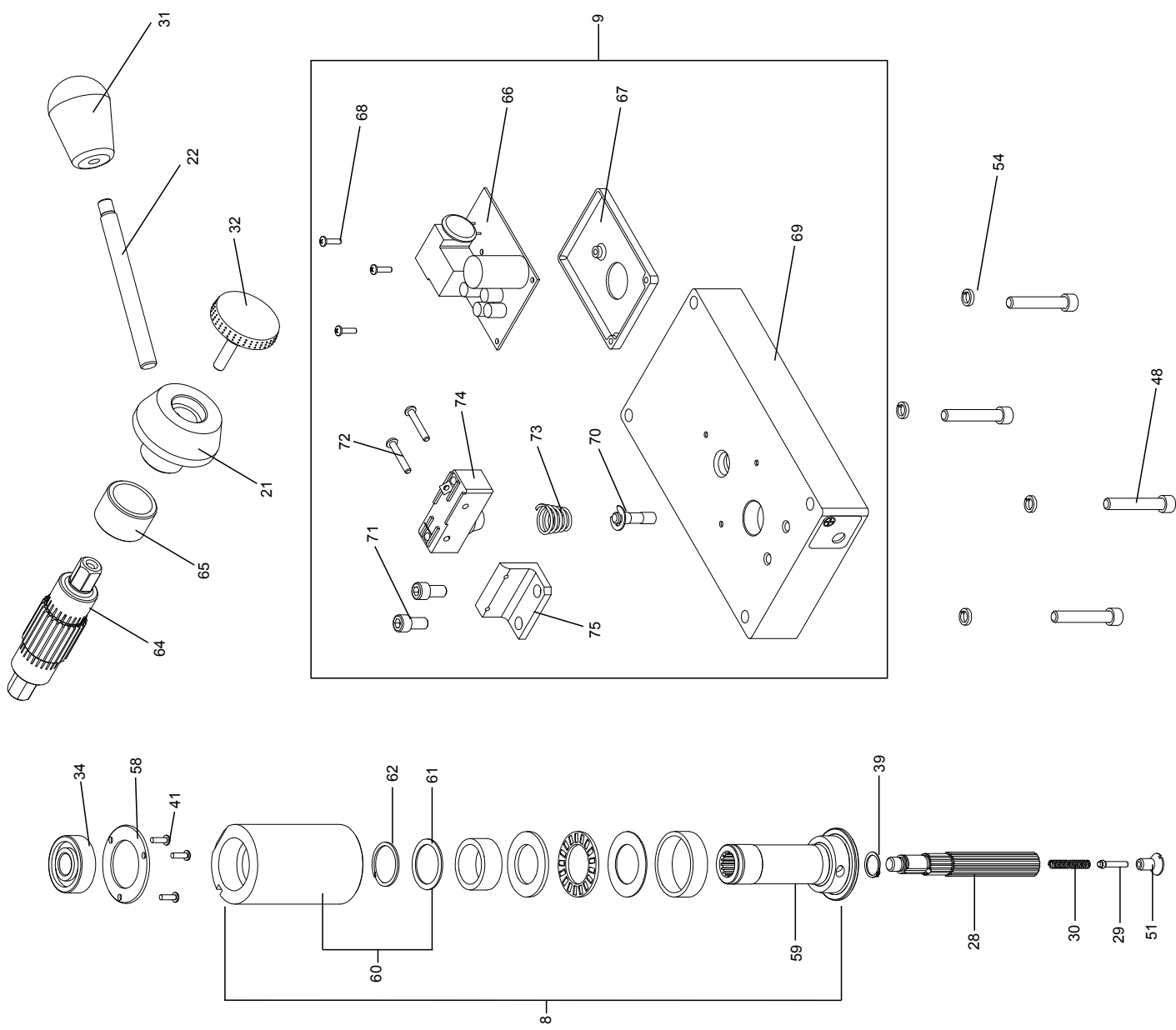
# CONTROL PANEL ASSEMBLY



| 08836 Control Panel Assembly |        |                              |     |
|------------------------------|--------|------------------------------|-----|
| Item                         | Part # | Description                  | Qty |
| 1                            | 08829  | Faceplate                    | 1   |
| 2                            | 90571  | Power Cord Assy              | 1   |
| 3                            | 08831  | Guard - Switch               | 1   |
| 4                            | 08832  | Switch - Motor On            | 1   |
| 5                            | 08834  | Cover - Switch Green         | 1   |
| 6                            | 08833  | Switch - Motor Off           | 1   |
| 7                            | 08835  | Cover - Switch Red           | 1   |
| 8                            | 08830  | Switch - Rocker, Illuminated | 1   |
| 9                            | 04879  | Lens - LED                   | 1   |
| 10                           | 04878  | Spacer - LED                 | 1   |
| 11                           | 04881  | Bulb - LED                   | 1   |
| 12                           | 04877  | Wire Harness                 | 1   |







# BFD-KX+ PARTS LIST

| Item # | Part # | Description                        | Qty |
|--------|--------|------------------------------------|-----|
| 1      | 20115  | Drill Housing & Label Assy         | 1   |
| 2      | 20120  | Gear Box Cap                       | 1   |
| 3      | 08428  | Gear Box Cover                     | 1   |
| 4      | 20125  | Motor Housing Assy                 | 1   |
| 5      | 09516  | Gear Assy, 24 & 14 Tooth           | 1   |
| 6      | 09517  | Gear Assy, 39 & 15 Tooth           | 1   |
| 7      | 09518  | Gear Assy, 39 Tooth                | 1   |
| 8      | 08433  | Quill & Arbor Assy                 | 1   |
| 9      | 08434  | Magnet / Switch Assy               | 1   |
| 10     | 08435  | Control Panel Assy                 | 1   |
| 11     | 08436  | Safety Strap                       | 1   |
| 12     | 20124  | Housing, Electrical Box            | 1   |
| 13     | 08828  | Backplate                          | 1   |
| 14     | 17630  | Armature                           | 1   |
| 15     | 08439  | Field                              | 1   |
| 16     | 08605  | Spindle Assy.                      | 1   |
| 17     | 08441  | Spur Gear #2 - 50 Tooth            | 1   |
| 18     | 07216  | Hole Plug                          | 1   |
| 19     | 09520  | Spur Gear #7 - 15 Tooth, 24 PD     | 1   |
| 20     | 08444  | Spur Gear #8 - 40 Tooth, 24 PD     | 1   |
| 21     | 08445  | Feed Hub                           | 1   |
| 22     | 08511  | Feed Handle .370 x 4.0             | 1   |
|        | 08512  | Feed Handle .370 x 2.5             | 1   |
| 23     | 07846  | Baffle                             | 1   |
| 24     | 17622  | Cap - Brush Holder                 | 2   |
| 25     | 17621  | Carbon Brush                       | 1   |
| 26     | 07848  | Cover, Brush Access                | 1   |
| 27     | 08447  | Handle                             | 1   |
| 28     | 09519  | Spline Shift                       | 1   |
| 29     | 08513  | Plunger                            | 1   |
| 30     | 17492  | Spring - Comp, $\phi$ .18 x 1.0 FL | 1   |
| 31     | 17021  | Knob - Oval                        | 1   |
| 32     | 08449  | Knob - Rubber Grip                 | 1   |
| 33     | 08674  | Grommet - Vibration                | 1   |
| 34     | 17270  | Bearing                            | 2   |
| 35     | 17277  | Key - 1/8 SQ x .53 LG              | 2   |
| 36     | 08451  | Key - 1/8 SQ x 5/32 LG             | 1   |
| 37     | 08456  | Ring - Retaining .406 Shaft        | 1   |
| 38     | 08452  | Ring - Retaining 7/16 Shaft        | 1   |

| Item# | Part # | Description                      | Qty |
|-------|--------|----------------------------------|-----|
| 39    | 17475  | Ring - Retaining 12mm shaft      | 1   |
| 40    | 08453  | Ring - Retaining, Int 1.259 Bore | 1   |
| 41    | 04718  | SCR PAN HD #4-40 x 3/8 LG        | 3   |
| 42    | 02385  | SCR BHC #6-32 x 1/4              | 4   |
| 43    | 90448  | SCR FHC #8-32 x 5/8 LG           | 4   |
| 44    | 41044  | SCR BHC #10-32 x 3/8 LG          | 6   |
| 45    | 90077  | SCR BHC #10-32 x 1/2 LG          | 4   |
| 46    | 51044  | SCR SHC #10-32 x 1-1/4           | 4   |
| 47    | 07849  | SCR SHC #10-32 x 2 LG            | 2   |
| 48    | 40078  | SCR SHC 1/4-20 x 1-1/2 LG        | 4   |
| 49    | 24081  | SCR Self Tap Pan HD #10 x 3/8    | 4   |
| 50    | 17459  | SCR FHC - Tapping #10 x 1/2      | 4   |
| 51    | 17493  | SCR FHC - Altered 1/4-28         | 1   |
| 52    | 90237  | Washer - Flat #10                | 2   |
| 53    | 50038  | Washer - Lock Helical #10        | 10  |
| 54    | 04721  | Washer - Lock 1/4 Hi-Collar      | 4   |
| 55    | 17610  | Washer - Flat 8mm                | 1   |
| 56    | 17632  | Washer - Fiber                   | 2   |
| 57    | 08000  | Washer - Spring                  | 1   |
| 58    | 08454  | Washer - Bearing Retainer        | 1   |
| 59    | 08481  | Arbor Assy                       | 1   |
| 60    | 08482  | Quill Assy                       | 1   |
| 61    | 08483  | Washer - Thrust                  | 1   |
| 62    | 24164  | Ring - Retaining                 | 1   |
| 63    | 08467  | O-Ring                           | 1   |
| 64    | 08463  | Gear - Feed 24 Tooth 1.00 PD     | 1   |
| 65    | 40231  | Bronze Bushing                   | 1   |
| 66    | 08646  | Circuit Board - 115V             | 1   |
| 67    | 08493  | Spacer - Circuit Board           | 1   |
| 68    | 08494  | SCR - PAN HD #4-40 x 7/16        | 3   |
| 69    | 08491  | Magnet - Winding Assy            | 1   |
| 70    | 08492  | Plunger Assy                     | 1   |
| 71    | 10971  | SCR SHC 1/4-20 x 1/2             | 2   |
| 72    | 10972  | SCR BHC 6-32 x 7/8               | 2   |
| 73    | 17271  | Spring                           | 1   |
| 74    | 04885  | Safety Switch Assy               | 1   |
| 75    | 04909  | Bracket - Safety Switch          | 1   |
| 76    | 10560  | Lock Washer                      | 1   |

## KARBON X+ CUTTERS CUTTERS FOR THE BFD-KX+

The Karbon X+ cutters are made specifically for the BFD-KX+. They are equipped with 5/8" tool-less Bayonet-style twist and lock shank, 1" D.O.C. stack cut cutter. They are made of premium M42 high speed steel and available in diameters from 7/16" to 1-3/8".

### Karbon X+ Cutters

| Use with Pilot Pin 14-00010 |         |
|-----------------------------|---------|
| 14-04375                    | 7/16"   |
| 14-05000                    | 1/2"    |
| 14-05313                    | 7/32"   |
| 14-05625                    | 9/16"   |
| 14-06250                    | 5/8"    |
| 14-06875                    | 11/16"  |
| 14-07500                    | 3/4"    |
| 14-08125                    | 13/16"  |
| 14-08750                    | 7/8"    |
| 14-09375                    | 15/16"  |
| 14-10000                    | 1"      |
| 14-10625                    | 1-1/16" |
| 14-11250                    | 1-1/8"  |
| 14-11875                    | 1-3/16" |
| 14-12500                    | 1-1/4"  |
| 14-13125                    | 1-5/16" |
| 14-13750                    | 1-3/8"  |

### Karbon X+ Cutter Kit 1" D.O.C.

| Part #   | Description  |
|----------|--|
| 14-00005 | Kit contains (17) Cutters, 1" D.O.C. - 7/16" through 1-3/8" plus (1) pilots in a sturdy plastic case |

## COMMERCIAL / INDUSTRIAL LIMITED WARRANTY

Blair Equipment Company warrants its Portable Magnetic Drills and Tornado II Paint Shakers for two (2) years and other products for ninety (90) days from date of purchase against defects due to faulty material or workmanship and will repair or replace (at its option) without charge any items returned. This warranty is void if the item has been damaged by accident or unreasonable use, neglect, improper service, or other causes not arising out of defects in material or workmanship. No other expressed warranty is given or authorized. Blair Equipment Company disclaims any implied warranty of Merchantability or fitness for any period beyond the expressed warranty and shall not be liable for incidental or consequential damages. Some states do not allow exclusion of incidental or consequential damages or limitation on how long an implied warranty lasts and, if the law of such a state governs your purchase, the above exclusion and limitation may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain warranty service, return the item(s), transportation prepaid to your nearest Factory Authorized Warranty Service Center, or to Blair Equipment Company, 3001 Hougen Drive, Swartz Creek, MI 48473.

This warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

*Photographs and Specifications shown are accurate in detail at time of printing. Manufacturer reserves the right to make improvements and modifications without prior notice. Blair and Rotabroach are proprietary trademarks of Blair Equipment Company.*

## AUTHORIZED WARRANTY REPAIR CENTER

For Warranty Service, return all products, transportation prepaid to:

**Blair Equipment Company  
3001 Hougen Drive  
Swartz Creek, Michigan 48473**



3001 Hougen Drive  
Swartz Creek, MI 48473  
800.426.7818  
info@blairequipment.com