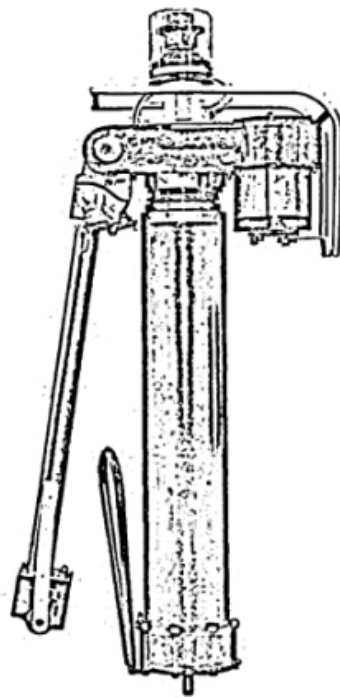




KING COBRA ROOFBOLTER OPERATORS GUIDE

Portable Pneumatic Roofbolters

For all models of the King Cobra® Roofbolter including: King Cobra® MAXI (wet and dust collection), King Cobra® Top Mount



www.MPISupply.com

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Read the entire Operators Guide before operating the Z Drill® and King Cobra® Roofbolters.

These safety instructions are for the prevention of accidents resulting in bodily harm and damage to the equipment.

Keep bystanders away from equipment in operation.

Always Work UNDER supported roof.



Hearing protection is recommended for prolonged use.

Head protection must be worn.

Eye protection must be worn.

Gloves must be worn.



MPI SUPPLY ROOFBOLTER OPERATORS GUIDE

To obtain optimum and safe performance from PPK Firefly/Rambor King Cobra® Drills these instructions must be followed at the start of every shift.

INTRODUCTION

The product line MPI Supply carries include the following drills:

- King Cobra® 0611 MAXI (Wet Head)
- King Cobra® 1020 Top Mount MAXI (Wet Head & Dust Collection Head)
- King Cobra® 1228 Top Mount MAXI (Wet Head & Dust Collection Head)
- King Cobra® 1332 Top Mount MAXI (Wet Head & Dust Collection Head)

MPI Supply roofbolters are used in the mining and tunneling industries and are designed to be used within the scope of industry safety parameters.

Units are able to accommodate standard 1 1/8" wet or dry drilling chucks. 7/8" chuck adaptors are available.

The Operators Guide describes the technical assembly, operation, and the required maintenance of the roofbolters. From this information, the operating personnel should gain the necessary knowledge as to the intended use of the King Cobra® air-powered roofbolters.

If you have any additional questions, comments or concerns about the King Cobra Drill®, please contact us at anytime via email, info@MPISupply.com or by phone at (412) 664-9320.

MPI EMERGENCY/24 HOUR CONTACTS

24/7 Coordinator Line – (412) 664-9320
Jason Weiland – (412) 477-4988
Geoff Popovich – (412) 215-0597



The Operators Guide contains information for the safe and proper operation of the King Cobra® drills. Your attention to safety and understanding of the information contained within this guide helps to prevent accidents and injuries. It also reduces damages and costs of repairs as well as reducing down time and prolongs the continual performance of the equipment.

Safety First

The instructions in the Operators Guide follow established industry guidelines with regard to accident prevention and the protection of the environment. **The Operators Guide must always be available at the active drilling site.** Mine and tunnel operators must utilize only trained and authorized personnel to operate and maintain King Cobra® drills. MPI Supply recommends task training individual operators.

The initial use of either the King Cobra® drill may only be carried out after understanding the Operators Guide. The manual is to be read and utilized by all personnel whose assignments will regularly or occasionally include work with the King Cobra® drills.

The following are among the tasks dealt with in particular:

- Operations
- Service and maintenance, including the disposal of production waste and waste management from operating fluids and other auxiliary material
- Cleaning
- Troubleshooting and
- Minor maintenance repairs

In addition to information stated in this Operators Guide, the recognized safety standards and regulations for the prevention of accidents in professional work in the country and sometimes state or territory of the location. King Cobra® operations are binding and are to be observed. **This document is meant only to reinforce safe work practices already in place at your facility.**

BASIC SAFETY INSTRUCTIONS

All drills MPI Supply manufactures and distributes are built using state-of-the-art technology with recognized safety standards. Nevertheless, the possibility of injury or death to personnel as well as damages to the equipment and other materials in association with its use does exist. Therefore it is imperative that strict compliance with these safety instructions is observed when working with and King Cobra® drills.

Above ground performance checks must be frequently conducted and any resulting maintenance performed. Both of these actions are assumed in the following safety instructions.



King Cobra® Drills are designed to be used in upright, vertical applications. MPI Supply does not recommend the units be used for any drilling outside of these parameters. MPI Supply will not be held liable for any damages resulting from such use. **The operator alone carries the risks of operation.** Refrain from any questionable and risky behavior when using the equipment.

Operators of King Cobra® Drills **MUST** stay alert to any possibility of danger arising with use, not only with the equipment but with surrounding environmental conditions and changing roof strata. Breakdowns or other malfunctions which can compromise safety are to be promptly repaired and corrected. MPI's around the clock service phone number is **(412) 664-9320**.

Only authorized and qualified personnel will operate and maintain King Cobra® Drills. The legal minimum age for operating personnel must be followed. Inexperienced miners (green or red hats) are **NOT** to operate King Cobra® Drills. However, they should be task trained by experienced personnel on the unit when working in close proximity to the machines.

All members of the drilling operation team **MUST** be allowed to refuse any instruction practicing adverse safety measures.

This Operators Guide should be placed in a protective cover at the drilling site and **MUST** always be available.

Before each shift the operating personnel should review the Operators Guide. Supervisors should check that operating personnel are safely using the equipment, aware of potential danger, and using extreme caution.

There may be no changes, attachments, or any remodeling made to the equipment, which could compromise safety.

MPI Supply recommends using only original equipment manufacturer parts for replacement. MPI Supply has a full staff of trained service technicians at our facilities to repair your equipment. Our service technicians are also trained for underground repairs and maintenance. To schedule repair appointments for your King Cobra® Drill please call us at **(412) 664-9320**.

Should the equipment experience any problems which poses a risk to safety, the equipment should be immediately shut off, locked and tagged out. The malfunction should be reported to the supervisor and corrected before being placed back in service.



PRE-OPERATION INSTRUCTIONS

Before beginning each shift:

- Manually inspect the equipment for visible damages or defects. Any discernable changes in the equipment's appearance **MUST** be immediately reported to the supervisor.
- Familiarize yourself with the work environment of the operation site. Make sure any obstructions or foreign equipment is distanced from the operating range of the equipment. **ALWAYS** check for loose rock above your drilling site.
- Check the stability of the mine floor under the areas you are drilling at.
- Make sure you have sufficient height clearance for the equipment, drill steels and bolt wrench.
- Make sure all supplies are readily accessible at your drilling site, including a roof prop for temporary support in unsupported areas.
- Check the in-line filters on the pressure sides of the equipment.
- Connect all hoses from the drill to the power source. Make certain all hoses are clean of debris and the compression couplings are clean.
- Test the motor rotation. Make sure the chuck is rotating in the proper direction.
- Test the cylinder elevation and dump controls by raising and lowering the leg three times.
- Check all bits and steels.
- Put on your hearing and eye protection and insert drill steel.



ROOFBOLTING SAFETY TIPS

Moving the equipment to the drilling position:

- Check the roof and rib conditions. Pass information on hazards and troubled areas to everyone working near that section.
- Ensure that all hoses are clear of props, machines, etc.
- Using a correct lifting method, place the drill into the drilling position. Get help from a co-worker if needed.
- MPI recommends using a three man drill team, including one operator, one steel/bolt installer and one supply preparation member. If three members are not available, it is recommended that two team members are assigned to the task.

Drilling beside the continuous miner:

- If rib conditions allow, when working on the left side of the miner, your steel/bolt installer should work on your right with the rib to your left.
- When working on the driver's side of the continuous miner, the steel/bolt installer should be on the rib side and the continuous miner on your left.

Bolting at the face (i.e. on the long wall, withdrawing the continuous miner and bolting in front):

- Erect temporary roof support props or jacks. **NEVER** position yourself or work under unsupported roof.
- Test the roof and ribs. Scale loose and dangerous rock before you begin drilling.
- Bolt only from the last safe head support into the face.

Proper operator stance:

- With the drill in position, stand with your legs shoulder length apart with your left leg braced, so that you have control over the equipment.

General Information:

- Ensure you are familiar with the type of chemical resin in use, length, set time, etc.
- Loose clothing should not be worn.
- Long sleeves should always be worn.
- Long hair should be tied back.



- Observe roof, ribs, machine and fellow workers AT ALL TIMES when drilling and bolting.
- All safety procedures should be carried out in a swift, professional, workmanlike manner.
- If you have a new worker on your drilling team, task train them on the proper operation of the equipment. MPI does not recommend inexperienced miners run the equipment however, in the event of an emergency the new inexperienced miner must be prepared to lock out and tag out the equipment.
- Never touch a chuck or drill steel that is in motion.
- Be careful when extracting drill steels from completed holes. Never leave any steel unattended while it is in the hole, you must maintain control of all steel sections in the hole.
- Dust must be controlled. MPI Supply offers Dust Collection Systems for use all King Cobra® Drills. King Cobra® Drills are adaptable to drill with water. In the event water or Dust Collection Systems are not used, it is advisable to hang curtain downwind.



DRILLING INSTRUCTIONS

After EVERY Pre-Operation Instruction is completed you may begin drilling.

- Raise the drill slowly until drill bit comes in contact with roof, being careful that the leg pressure **IS NOT COMPLETELY ON**.

FAILURE to raise the cylinder slowly will not only bend/break drill steels but may also cause serious injury.

NOTE: The Average Leg Thrust for King Cobra® Drills is **1,500 psi**.

- After the drill steel has reached the roof, slowly open your throttle control.
- The drilling rate may then be regulated but the operator. Controls should always be maintained. **DO NOT** tape or modify any controls that will limit the operator's ability to run the equipment. Once the hole has been started the operator will gain a better understanding of how much pressure is needed on the throttle.
- During dumping (lowering) of the drill, remember to run the rotation to help retain the drill steel.

NOTE: In case of failure, malfunction or decreased drill performance, turn the machine off and troubleshoot the problem.

- Upon completion of drilling operations, check the drill for damages and clean the drill.



GENERAL MAINTENANCE AND REPAIR

There may be no changes, attachments, or any remodeling made to the equipment, which could compromise safety.

Required maintenance and service schedules as prescribed in the Operators Guide must be observed and adhered to. Changes in scheduled maintenance may only be initiated by those specializing in the mechanics of the equipment. The operating personnel is to be informed before initiating any maintenance or repairs on the equipment.

Maintenance and repairs are to be provided as required.

MPI Supply recommends that every drill in service should be scheduled for a maintenance check **at least once a year** or as needed.

Existing national regulations are to be observed with all work in tight and narrow spaces.

When handling and using lubrications, greases, and other chemical substances, observe each product's safety instructions and regulations.



KING COBRA® DESCRIPTION

King Cobra® Drills are to be used for mining and tunneling within the scope of intended and safe use. The compact and portable King Cobra® Drills allow for operation in many narrow or otherwise unreachable passages. The King Cobra® product line is manufactured by PPK Firefly in Mt. Thorely, NSW Australia.

MPI is the authorized distributor and service purveyor for Rambor's King Cobra® Drills in North and South America. The King Cobra® portable pneumatic roofbolters MPI Supply carries include (but are not limited to):

- 1) King Cobra® 0611 MAXI Series (23" collapsed height – 43" extended)
- 2) King Cobra® 1020 Top Mount MAXI Series (40" collapsed height – 78" extended)
- 3) King Cobra® 1228 Top Mount MAXI Series (47" collapsed height – 110" extended)
- 4) King Cobra® 1332 Top Mount MAXI Series (52" collapsed height – 126" extended)

The King Cobra® Drills, regardless of seam height) are adaptable for wet drilling, dry drilling, to be used with Dust Collection Systems (more information on the MPI Supply Dust Collection Systems can be found at www.MPISupply.com).



KING COBRA® PREPARATION AND OPERATIONS

The following procedures are designed to obtain optimum and safe performance from King Cobra® Drills. These instructions **MUST** be followed at the start of every shift.

- Flush out air and water lines.
- **IMPORTANT** – Check and refill in-line oiler.

Pour 50mls of oil into the main airline before use.

NOTE: DO NOT USE hydraulic oil or heavy lubrication compounds as these will cause leg and air motor failure.

- If in-line oilers are used with your system, keep providing lubrication to the motor during operation. Average recommended oil usage is 1 liter (1/4 gallon) per 25 bolts.
- Adequate lubrication must be supplied to motor. However, it is mandatory that the feed rate for lubricant to be set so that the limits for oil mist are not exceeded.
- The hose connecting the oiler to the King Cobra® Roofbolter should be no longer than **16 feet**.
- Connect air and water lines (if drilling wet) to the King Cobra® Roofbolter, ensure you insert safety locking pins to hose fittings.
- Filters should be checked and cleaned every shift and replaced when damaged. **The King Cobra® Roofbolter MUST NOT be used without the filters in place.**
- The fittings used to connect the air/water hoses to the King Cobra® Roofbolter should provide an attachment comparable with the hose burst pressure rating.

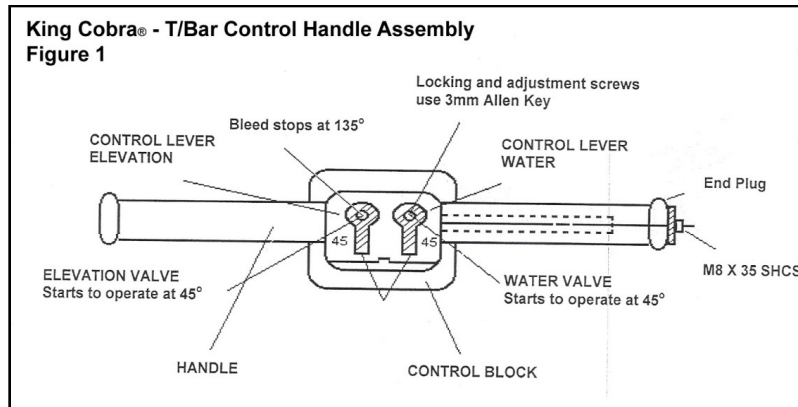
NOTE: WET DRILLING SYSTEMS

The King Cobra® Roofbolter is fitted with one filter screen in the air supply claw coupling and one filter screen in the waster supply claw coupling. There is also a third and fourth filter situated in the pivot block for filtering air and water to the motor and leg.

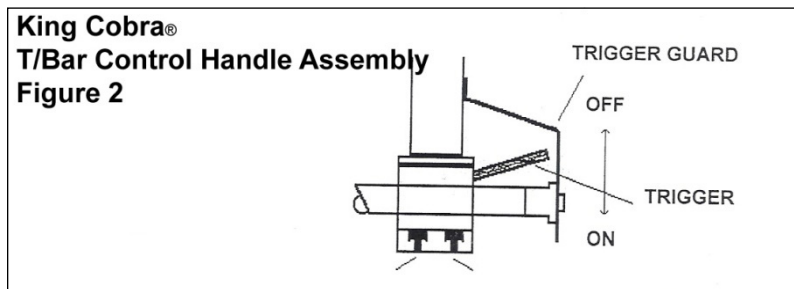
NOTE: DRY DRILLING SYSTEMS

There are only two filters in the dry model, one situated in the pivot block and one filter screen in the air supply claw coupling for filtering air to the motor and leg.

- Turn water and air controls to the OFF position (Figure 1 below)



- Ensure the drill steel is removed from the chuck and slowly turn the water and are on.
- Check the elevation and dump control by raising and lowering the leg three times (Figure 1 above).
- Check water flow control (Figure 1 above).
 A constant supply of clean high pressure water is essential for efficient operation of the King Cobra® Roofbolter.
Recommended pressure 100 – 175 psi.
- Check motor rotation control (Figure 2 below).



- Check bits and steels.
- Put on your hearing and eye protection and insert drill steel.



KING COBRA® TROUBLESHOOTING TIPS

ISSUE	ACTION TO TAKE
Loss of Power to Motor	<ul style="list-style-type: none">- Check the main air line power source- Inspect all air lines for damage or kinks
Loss of Leg Thrust	<ul style="list-style-type: none">- Check the main air line power source- Inspect ALL air lines for damage or kinks- Check for leaks on leg seals- Inspect leg for damage
Water in Leg	<ul style="list-style-type: none">- Turn machine on head, Open dump valve and elevate to expel water

NOTE: MPI Supply strongly recommends using an in-line water separator for use with all pneumatic powered equipment .

Loss of Water Pressure	<ul style="list-style-type: none">- Check the main water line source- Inspect ALL water lines for damage or kinks- Check the filters for blockage- Check the adjustment on the water control rods (contact MPI for specific rod adjustments).
Slow Drilling	<ul style="list-style-type: none">- Check your bits and steels- Check for adequate air and water supplies- Check the muffler for blockage
Faulty Rotation Trigger	<ul style="list-style-type: none">- Check the valve in the pivot block- Check the rotation control rod- Contact an authorized MPI service technician to assist with this issue
Slow Dumping	<ul style="list-style-type: none">- Check for leaks on leg seals- Inspect leg for damage- Check the twin dump valves

NOTE: King Cobra® Roofbolter leg seals **MUST** be replaced with the correct leg seals. If other seals are used, poor performance, leg damage and potential injury may result.

MPI Supply is available to assist you in troubleshooting issues **(412) 664-9320**. If the issue is severe MPI Supply will service your equipment at one of our repair facilities.



KING COBRA® 0611 MAXI SERIES **TECHNICAL INFORMATION**

KING COBRA® 0611 MAXI Compact Four Stage Portable Roofbolter

Closed Height:	1.97 feet
Extended Height:	3.61 feet
Operating pressure:	100 psi
Air Consumption:	120 cfm
Output:	150 ft lbs @ stall
Torque Available Through Clutch:	250 ft lbs

Four Stage Model

Maximum Leg Thrust (1 st Stage):	2500 ft lbs
Maximum Leg Thrust (2 nd Stage):	2000 ft lbs
Maximum Leg Thrust (3 rd Stage):	1750 ft lbs
Maximum Leg Thrust (4 th Stage):	1500 ft lbs

Approximate Weight: 70 lbs.

Noise Level: 94 dBA

All hoses, oilers, water separators and chucks sold separately.





KING COBRA® TOP MOUNT SERIES **TECHNICAL INFORMATION**

KING COBRA® Top Mount Portable Roofbolter

	High Speed	High Torque
	14-39 Ratio	11-42 Ratio
Operating pressure:	100 psi	100 psi
RPM:	900	700
Air Consumption:	120 cfm	120 cfm
Output:	149 ft lbs @ stall	200 ft lbs @ stall
Torque Available Through Clutch:	250 ft lbs	250 ft lbs
Approximate Weights:	74-98 lbs.	
Noise Level:	84-95 dBA	

Available models: 1020 MAXI, 1228 MAXI and 1332 MAXI

All hoses, oilers, water separators and chucks sold separately.





MANUFACTURERS WARRANTY DOCUMENT

PPK Firefly/Rambor, incorporating King Cobra Mining Equipment Pty Limiter ABN 45 003 916 738 (hereinafter referred to as “King Cobra”) warrants that all of its Products are free from defects in material and workmanship under normal operating conditions for the period of 12 months.

This warranty only applies to new Products sold by King Cobra and or any service agent authorized in writing by King Cobra will repair or replace any part, which proves defective within the limits of this warranty at no charge to the Buyer for parts or labor.

Failure to fully comply with the Workshop Manual or the operating instructions contained in the Operators Guide and Safety Points Manual supplied with the Product shall render this warranty void.

This warranty does not apply to:

- Any part which has been subjected to misuse, negligence, accidental damage, improper or inadequate maintenance or improper storage.
- Repairs rendered necessary or arising from the use of other than genuine King Cobra parts.
- Normal maintenance items including, but not limited to, seals, ball bearings and filters and the labor involved in the replacement thereof.
- Deterioration of any item due to normal use, fair wear and exposure unless due to a defect in material or workmanship.
- Any work or adjustment performed by persons other than a service agent duly authorized in writing by King Cobra or damage resulting there from.

The defective part for which a claim for replacement is made pursuant to this warranty must be returned to King Cobra or to a service agent duly authorized in writing by King Cobra for examination and the decision as to whether the replacement of the defective part falls within the provisions of this warranty for replacement free of charge shall be made at the sole discretion of King Cobra.

DOWN TIME

PPK Firefly shall not be liable for any other cost, expense or damages incurred buy the Buyer whilst the Product is out of service during performance of any warranty work.

SERVICE/MAINTENANCE PROGRAM REQUIRED BY PPK Firefly

PPK Firefly requires that no later than every 200 hours of operating time or not later then intervals of three months whichever shall occur first in time the Product be removed from the work site to a service area for cleaning, inspection and removal of any external or internal build up of oil, water, dirt or other contaminants and for the inspection and replacement of filters and where necessary, the seals and the checking of the general operation of the Product such service work to be performed only by a service agent authorized in writing by PPK Firefly.

Failure to comply with the Service/Maintenance Program will render the Warranty void.



MANUFACTURER INFORMATION

All PPK Firefly, King Cobra® Roofbolters are manufactured by:

PPK Firefly
Incorporating King Cobra Mining Equipment
25 Thrift Close
Mount Thorley
NSW Australia 2330
Phone: +61.2.6574.6500
Email: info@ppkgroup.com.au
www.ppkgroup.com.au
www.rambor.com.au

NORTH AND SOUTH AMERICAN DISTRIBUTOR INFORMATION

All King Cobra® Roofbolters in North and South American are sold and serviced by:

MPI Supply
25 Allegheny Square
Glassport, PA 15045
Phone: (412) 664-9362
Email: info@mpisupply.com
www.mpisupply.com