

# MICRO-BLASTER 1™ INSTRUCTIONS



# !!!!!!WARNING!!!!!!

BEFORE OPERATING THIS DEVICE CHECK WITH LOCAL  
AUTHORITIES FOR PERMITTING AND LICENSING AS  
REQUIRED!

OBEY ALL REGULATIONS AND ALWAYS PRACTICE  
THE HIGHEST STANDARDS OF SAFETY  
USE ONLY IN WELL VENTILATED AREAS

\_\_\_\_ Your MICRO-BLASTER KIT should contain the following items:

- 1 MICRO-BLASTER I UNIT
- 1 RUBBER BULB HOLE BLOWER
- 25 FT. RELEASE CORD W/CLIP & WINDER
- 2 TAPERED DRIFT PINS
- 1 HEX KEY, 1/8 INCH
- 1 5/16" BORE BRUSH
- 1 CORD REDIRECT KIT
- 1 INSTRUCTION CARD
- 1 INSTRUCTION MANUAL

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MICRO-BLASTER CARTRIDGES ARE SUPPLIED  
SEPARATELY

CONTACT YOUR DEALER OR EZEBREAK FOR DETAILS

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Ezebreak, LLC, 1 Clay St, PO Box 29, Frankford WV, 24938  
V 304-497-9970, F 304-497-9971 [www.ezebreak.com](http://www.ezebreak.com)

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US Patent #7,069,862 and International Patents Pend.

# MICRO-BLASTER INSTRUCTIONS

!CAUTION! READ, ABSORB AND UNDERSTAND THESE DIRECTIONS BEFORE USING THIS DEVICE. SERIOUS INJURY MAY RESULT FROM IMPROPER USE!

We strongly recommend that the user practice using this device as much as is reasonably possible in advance of an important project. Because MICRO-BLASTING uses very low energy cartridges, it's use demands attention to such subtleties as the grain of the material and the distance from a free edge of that being cracked. Although a great deal of engineering and testing has gone into the development of this device it's effective use is quite dependent on the user's experience and skill in using it. If the material is flawed or cracked, contains voids or is especially soft, i.e. "rotten rock", this system may prove to be ineffective. The cracking action is dependent on the very rapid buildup of pressure upon activation of the Micro-Blaster Cartridge. If these gasses are allowed to escape too easily through cracks etc. sufficient force to crack the rock will not be generated. In situations where one has encountered flawed material or the material has cracked from the use of MICRO-BLASTING, frost or whatever, an alternative technique such as "plugs and feathers" or more simply the use of suitably sized "drift pins" (2 are included with your MICRO-BLASTER kit) may prove to be the most effective method. The use of small hand sledges to "coax" the rock apart can often be quite effective. Placement of cartridges too near the bottom of a rock may also prove ineffective in that the rock may only "blow out" at the bottom. Judgment needs to be exercised to place the cartridge near the middle of the mass to be cracked in order to avoid this problem and gain the maximum effect.

CAUTION! ALWAYS USE EYE, EAR AND HAND PROTECTION WHEN EMPLOYING THIS TECHNIQUE AND NEVER ACTUATE THE MICRO-BLASTER WITH ANYONE INCLUDING THE OPERATOR, WITHIN 25 FEET (8 METERS) OF THE MICRO-BLASTER.

# Step by Step Instructions.

To be Followed in the Order Presented

DO NOT USE THIS SYSTEM IF YOU DO NOT  
FULLY UNDERSTAND THESE DIRECTIONS

1. Drill a 5/16" hole, no more than 10" deep in the rock or masonry you intend to crack, for 2 cartridge shots use 12" deep hole. Painting a mark or applying a piece of tape on the drill bit at this distance from the end will greatly aid in drilling holes to the proper depth. The use of a new and sharp carbide masonry bit is highly recommended. Worn bits can drill undersized holes which will not allow the MICRO-BLASTER to be inserted into the hole to its full depth. If problems are experienced with holes being too small, measurement of the bits used may determine the cause. Also holes that are not drilled straight can cause problems in inserting the MICRO-BLASTER into the hole to the full depth. Inserting the MICRO-BLASTER to its full depth is critical. If the hole is not able to accommodate the entire length of the MICRO-BLASTER, in turn allowing the tip to make contact with the primer end of the cartridge, no initiation of the cartridge will occur. Depending on the hardness and type of material, this hole should be 4 to 12 inches from the edge of the material you intend to crack. Experience will dictate placement of the hole. Drilling in the center of a large rock may not be effective and only eject the MICRO-BLASTER from the hole upon initiation of the cartridge without cracking the rock. If this occurs drilling closer to an edge will yield better results.

2. The hole should next be cleaned of all debris and rock dust generated during the drilling process. Use the Hole Blower supplied with your MICRO-BLASTER kit to blow out the drilling dust. Any other technique using compressed air will also be effective as long as the tube delivering the air is of sufficient length to reach the bottom of the hole and eject all loose material. After blowing out the hole run the BORE BRUSH in and out of the hole to remove any packed rock dust from the

sides of the hole followed by blowing out the loosened dust from the hole.

3. Next make sure that the un-cocked MICRO-BLASTER can be inserted to the full depth of the hole. A snug fit is best as it will help to hold the MICRO-BLASTER in place upon initiation of the cartridge. If the hole is too tight running the rotating drill bit in and out of the hole can dislodge packed rock dust that the HOLE BLOWER or BORE BRUSH did not remove. This may not help if the bit is undersized or the hole is not drilled straight, check bit diameter if cleaning the hole carefully does not cure the problem. After doing this blow out the hole again and make sure that your MICRO-BLASTER can be inserted to the full depth of the hole. Do not go on to step 4. until completion of this step is accomplished and the hole has been properly cleaned!

4. Insert a MICRO-BLASTER cartridge into the CLEANED and CHECKED hole making sure that the end of the cartridge with the metal primer is positioned correctly out so that it will make contact with the tip of the MICRO-BLASTER when it is inserted into the hole in the next step (5). Using the Hole Blower tube gently push the cartridge to the bottom of the hole. USE ONLY THE HOLE BLOWER TUBE TO PUSH THE CARTRIDGE INTO THE HOLE! If step 3 was properly completed this will require very little or no force. NEVER FORCE A CARTRIDGE INTO THE HOLE. EXTREME INJURY MAY RESULT!

5. Before inserting the MICRO-BLASTER into your drilled hole the release cord needs to be stretched out to its full length, 25 feet (8 meters), attached to the Release Plate hole, and the device needs to be cocked with SAFETY CLIP applied. Cocking is accomplished by pulling the COCKING KNOB (attached to the end of the hexagonal hammer) away from the BODY of the MICRO-BLASTER while pressing in the Release Cord end of the Release Plate until it locks the hammer in the extended (cocked) position. The hexagonal Hammer should now be protruding about three quarters (3/4) inch further than in the uncocked position. BE SURE TO ATTACH THE SAFETY CLIP

TO THE SLOTTED END OF THE RELEASE PLATE. Next shake the MICRO-BLASTER so that the Firing Pin extends about 1/10 of an inch from the tip of the MICRO-BLASTER. A whipping motion seems the most effective for extending the Firing Pin. If the Firing Pin is not easily shifted, check for damage or dirt which may be stopping its free movement. NEVER USE YOUR MICRO-BLASTER IF THE FIRING PIN DOES NOT MOVE FREELY. The green indicator should not be visible through the countersunk hole in the side of the MICRO-BLASTER when the Firing Pin is extended. With the pin extended from the tip, carefully insert the tip of the MICRO-BLASTER into the hole and gently slide it into the hole until it makes contact with the cartridge installed in the previous step. Some resistance to insertion is desirable as this will contribute to the effectiveness of the MICRO-BLASTER in that the gasses produced from initiation of the cartridge will not easily eject the MICRO-BLASTER from the hole. To make sure that you have made contact with the cartridge notice that you can now see the green head of the Firing Pin through the countersunk hole in the side of your MICRO-BLASTER BODY. If you cannot see the green it is very likely that the tip of the MICRO-BLASTER is not in contact with the end of the cartridge. The MICRO-BLASTER will not initiate the cartridge if the tip is not in contact with the cartridge. When you can see green through the hole, the tip of the MICRO-BLASTER is in contact with the cartridge and ready to fire. Covering the masonry or rock with a blast mat (ie old carpet or other heavy material) is highly recommended and will avoid damage to anything in the immediate area from flyrock. After making sure that the area is clear, remove the safety clip and retreat to the end of the 25 foot (8 meter) release cord. Be extremely careful to avoid stepping on or tripping over the release cord and inadvertently triggering the MICRO-BLASTER as you move to the WINDER end of the Release Cord.

6. Before initiating the cartridge again carefully scan the area around where you are working and make sure that no one has inadvertently entered your work area. When you have determined that the area is clear pull the Release Cord gently but steadily until the MICRO-BLASTER initiates the cartridge.

## MAINTENANCE and TROUBLESHOOTING

Your MICRO-BLASTER has been designed to provide many years of service with a minimum of care. Routine disassembly, cleaning and lubrication with a light oil will keep your MICRO-BLASTER fully functional. Special attention should be paid to maintaining free movement of the firing pin which extends from the tip of the MICRO-BLASTER. Always check for free movement before each use and remedy any conditions that might inhibit this free movement before using.

CAUTION! NEVER USE YOUR MICRO-BLASTER IF THE FIRING PIN DOES NOT MOVE FREELY! SERIOUS INJURY MAY RESULT!

\_\_\_\_\_ Other than problems with drilled holes mentioned above we have encountered relatively few problems using this device. When cracking masonry in a hole or ditch the pulling action on the release cord may tend to lift the MICRO-BLASTER out of the drilled hole. If this happens the Firing pin will not be able to make proper contact with the metal primer in the end of the cartridge and will not initiate. To solve this problem redirect the release cord so that the pulling action does not lift the MICRO-BLASTER out of the hole when the Release Cord is pulled. A weight with a small pulley positioned below the level of the Release Plate with the Release Cord passed through the pulley has worked well to solve this problem. Also drilling a shallow second hole adjacent to the first hole in which an anchor/pulley assembly is installed can also provide the required redirect of the Release Cord. We are working on a simple device to do this which when finished will be available through our dealers or online.

When cracking rocks in situations where gravity does not hold the MICRO-BLASTER in place the user will be required to use their ingenuity to hold the device in place. The use of secondary holes to mount anchors which hold the MICRO-BLASTER by means of bungee cords has been used with good success in these situations.

## MISFIRES

Very occasionally cartridges have not initiated in the rock. If this happens wait at least one minute before approaching the MICRO-BLASTER and then very carefully withdraw the Micro-Blaster from the hole with a twisting motion. Drilling dust, which was not completely removed from the drilled hole, can become packed on top of the cartridge with the insertion of the MICRO-BLASTER keeping the Firing Pin from making forceful contact with the primer when the MICRO-BLASTER is actuated. Rather than trying to clean the hole, which might present a safety issue, we recommend users drill a second hole 2 to 3 inches away and parallel to the first drilled hole and then follow the instructions stated earlier in this manual. Be especially careful to properly clean the hole before inserting the cartridge and MICRO-BLASTER. To avoid MISFIRES maintain Micro-Blaster in top condition.

## ACTUATOR PIN PROBLEMS

As has been stated earlier it is extremely important to maintain free movement of the actuator pin. Disassemble, clean, and re-lubricate often. Pins “dry fired” against hard materials have been known to crack due to the high hardness of the pin. If it is noticed that the end of the pin is not in the form of a smooth half round ball the firing pin may have been damaged during use. If the amount of pin sticking out of the pin tube when the un-cocked hammer is pressed into the body of your MICRO-BLASTER (there by extending the pin completely) is about 1/8 inch, proper initiation of the MICRO-BLASTER cartridge should take place. Pins that have chipped or become rough can puncture the primer allowing flame to escape through the puncture which will quickly erode the tip of the actuator pin. Maintaining a half-round and polished end will avoid this problem. Test firing with the tip held against a wood surface should leave a noticeable dent indicating proper function of the unit.



## RECOMMENDED PERIODIC MAINTENANCE

1. Remove Release Plate Screws (b) with 1/8" hex key.
2. Remove hex Hammer assembly using a 5/16" (8 mm) w
3. The Firing Pin (j) can then be removed through the same opening the Hammer Assembly was removed from.
4. Thoroughly clean all parts and lubricate with light oil and reassemble in reverse order of disassembly.
5. Test for free movement of hammer, release plate, and actuator pin.

### INFORMATION, SPARE PARTS & ACCESSORIES

Go to the website below or for further information on your MICRO-BLASTER . Spare parts can be obtained from your MICRO-BLASTER dealer. Units needing repair will only be accepted after proper return authorization has been given by EZEBREAK.

[www.ezebreak.com](http://www.ezebreak.com)

**EZEBREAK**

**304-497-9970**

**CRACK WISELY!**

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**This section of the manual contains a few short articles on using your Micro-Blaster I™**

### **Breaking Large Rocks with the Micro-Blaster™**

To break large rocks or to break off larger pieces of rock with the Micro-Blaster™, a technique known as "pre-splits" has allowed us to break up rocks weighing up to 10 tons. The technique involves drilling a series of holes along a line defining where the rock should split. This is similar to the technique used since Roman times using tools known as "plugs and feathers" or "wedges and feathers" and is still used today in dimensional stone quarries to make predictable cuts. Probably the most noticeable example of the use of this concept on a large scale can be seen along the sides of highways where deep cuts were made in the surrounding terrain to allow construction of the road. The parallel vertical lines (1/2 of the original drilled holes) are evidence of the accuracy and effectiveness of "pre-splits".

With the Micro-Blaster™ experience with the material being cracked will allow the user to make decisions on hole spacing. Lacking that, a good starting point would be to space your holes 12 inches apart and then fire the Micro-Blaster™ in one of the middle holes. The first shot may not split off any material but on close examination should reveal a

hairline crack emanating from the hole and connecting some or all of the other holes. Remember, holes intended to be shot always need to be cleaned thoroughly just before loading and firing. The other holes not shot do not require cleaning. A second shot can be done in one of the other holes as long as the crack connecting the holes is not too large which will allow the expanding gases from the 2nd initiated cartridge to escape too rapidly through the crack.

If the second shot does not open or extend the original hairline crack from the first shot two options need to be considered. The crack may be allowing too much of the gas to escape or the spacing of the drilled holes needs to be reduced. If you decide that too much gas is escaping you will now need to use the tapered pins supplied in the Micro-Blaster™ kit to wedge apart the rock. For most rocks placement of the two pins at 1/3 intervals along the line of holes and hammering alternately on each pin should finish the split. For especially large rocks more pins may be called for to exert greater splitting force.

In general softer materials will need the holes to be drilled closer together than the harder materials. This is primarily because the softer materials tend to absorb more of the energy developed by the Micro-Blaster™ cartridge. Concrete, partly because of its relative softness and the presence of the aggregate within (which breaks up the fracture lines), may require hole spacing as close as six inches. Very hard fine grained rock such as granite or limestone may be effectively cracked with hole spacing as much as eighteen to twenty four inches. When breaking rock with distinct layers, holes drilled parallel to the layers are often more effective than holes drilled at right angles to or through the layers (i.e. sandstones).

After some experience using the Micro-Blaster™ with specific materials the spacing of holes will become more predictable. Furthermore an organized and methodical approach to your projects will greatly improve productivity. Always check the firing pin for free movement to avoid misfires and observe all safety precautions.

### **Breaking Larger Rock Using 2 Cartridges in the Same Hole**

On projects where the breaking of larger rock or softer materials (i.e. concrete) must be broken, the use of 2 Micro-Blaster Cartridges in the same hole has proven to be extremely effective. We estimate that a fourfold increase in the effective power can be expected over the use of a single cartridge in a hole. When anticipating that more than one cartridge will be required to effectively crack the material at hand, the 5/16" dia. holes should be drilled to a depth of 12" and then cleaned in the usual way . **Never use more than 2 cartridges in the same hole!**

Since the resulting “blast” will be increased when using 2 cartridges in the same hole, we recommend a suitable mat (carpet works well) be placed over the material to be broken to avoid fly rock issues and muffle the sound.

Whether using one or two cartridges, the cleanliness of the drilled hole is always extremely important and should always be done thoroughly to insure dependable operation of your Micro-Blaster and avoid misfires.

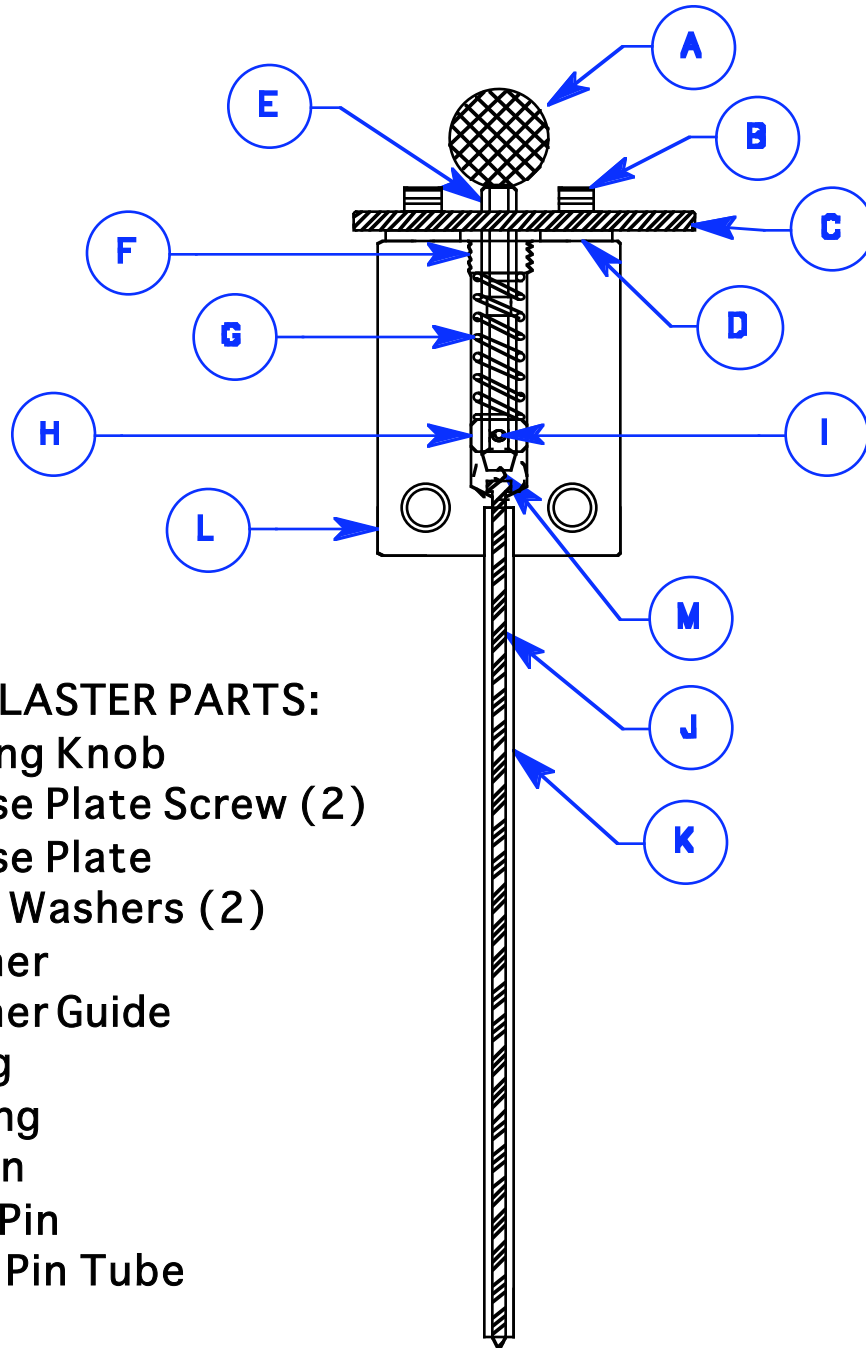
**Always observe all suggested safety precautions and use your Micro-Blaster in a sensible and responsible manner.**

### **Breaking Concrete**

As stated earlier, concrete, because of its relative softness and the aggregate it contains, will require more shots to be placed closer together than when breaking hard rock. Rebar and reinforcing wire will also further reduce the tools capacity. Large masses containing these reinforcements have been successfully broken by successive shots starting at a free edge or corner and progressing through the mass.

Concrete slabs and poured walls, given their relative thinness, should be drilled in the center of an exposed edge. This will allow holes to be drilled to their proper depth (9 to 10 inches for single cartridge shots and 12 inches for 2 cartridge shots). If no edge is exposed, very shallow angled holes can be drilled and shot in the face of the concrete (floors or walls). Care should be taken to drill the holes so that the bottom of the hole is in the center of the material to be broken. To start these shallow holes, begin by drilling at a right angles to the surface (approximately 1/4 inch deep) and then swing the drill to the angle required. Be careful not to drill too deeply when starting the hole, as you may damage the tip of the drill when moving to the shallow angle required. Pre-scoring the outline of the opening with a masonry saw, then Micro-Blasting the material out will provide a more finished appearance to the opening if required. It is good practice to score as deeply as possible and if access is available to score from both sides. Holes drilled in the corners through the wall or floor will aid in the proper alignment of these scored lines and should be done before scoring. Drilling in these slots may cause the tip of the drill to jam and damage the bit.

## MICRO-BLASTER Assembly & Parts



### MICRO-BLASTER PARTS:

- A. Cocking Knob
- B. Release Plate Screw (2)
- C. Release Plate
- D. Nylon Washers (2)
- E. Hammer
- F. Hammer Guide
- G. Spring
- H. Bushing
- I. Roll Pin
- J. Firing Pin
- K. Firing Pin Tube
- L. Body
- M. Sight Hole

**Shown without Lanyard and Safety Clip Assembly**