

Technical Operating Instructions for Magnum Cutting Systems

<http://www.magnumusa.com/operating-video.html> for online instructions

In Case of Emergency Immediately Call for Medical Aid.

Familiarize yourself with this manual prior to operating Magnum cutting equipment. If you have any questions regarding the safe operation of Magnum cutting equipment or cutting procedures, call 800-957-4344 for technical assistance.

Temperature warning: Magnum cutting consumables generate a 10,000°F particle stream. The particles cause splatter. The melted material can not only contribute to fire, it can also cause severe bodily injury and death if standard industrial safety practices and standards are not followed.

Industrial warning:

- Do not use Magnum cutting products underwater with a welding power source.
- Use a Magnum ignition system in igniting consumables.
- Wear protective welding clothes, boots and suitable eye protection.
- Ensure that all parts of the system are in good working order prior to use.
- Never point the torch at yourself or another person.
- Clear work areas of bystanders and flammable/combustible materials.
- Know the composition of the metal being cut and adjacent materials.
- Cover head, face and body to protect against falling sparks and molten slag.

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1. Inspection and repair

This manual describes recommended operating procedures, maintenance requirements and repair procedures to ensure the proper operation of the Magnum cutting system. Components include the cutting torch, ignition system and equipment. Oxygen regulators, cylinders and valves are to be inspected and repaired by certified personnel trained to perform work on high pressure systems.

2. Precautions

Users and supervisors are to thoroughly familiarize themselves with this manual prior to using or disassembling the Magnum cutting system. Magnum products are never to be modified or used other than as specified in this manual. Be advised oxygen reacts explosively in the presence of oil and grease. Therefore, it is paramount all Magnum cutting equipment be kept away from such substances. Never use compressed air, oil, solvents or other material to clean the oxygen system. Never connect the torch to compressed air as it would leave an oil residue in the oxygen hose. Always use a designated Magnum ignition to ignite Magnum consumables. Magnum cutting torches are not to be used with a welder in water due to shock hazards. Be thoroughly familiar with ANSI/ASC Z49.1-88 "Safety in Welding and Cutting" procedures.

Materials like galvanized pipe can manifest toxic fumes when cut. Protect yourself and others from fumes and gases generated from the material being cut as they may pose a health hazard. Protect eyes with a number 6 shade for oxy-flame mode, and number 10 for oxy-arc mode. Also protect skin from arc rays and splatter. The operator and all bystanders must always wear adequate protective clothing, shoes and welder's gloves when using the Magnum cutting system. Use in a well ventilated area or employ a special breathing apparatus when cutting metals like galvanize, cadmium or heavily painted materials. Keep the ignited consumable tip away from oxygen cylinders, batteries and hoses. Follow additional safety precautions when using the cutting torch in windy or adverse settings. Keep hoses, cables and cylinders behind you so as to never allow falling sparks or molten metal to come into contact with system components. Any damage to system components could render the equipment unsafe to operate. Always close the cylinder valve and bleed the oxygen line when leaving the cutting torch unattended. Never touch live electrical ignition parts. Always wear welder's gloves when inserting the consumable into the torch or extender. Never let the hot consumable touch any unprotected part of your body. Review the American National Standard Z49.1 "Safety in Welding and Cutting" Published by the American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126. OSHA Safety and Health Standards "29 CFR 1910" available from the U.S. Department of Labor, Washington, D.C. 20210.

3. Components

Required Equipment includes the cutting torch handle, consumables, tube collets with washer, oxygen cylinder, oxygen valve, oxygen regulator, battery ignition, protective clothing and eye protection. Piercing extenders are available as an option.

4. Setup

Remove flammables or other unsafe materials from the work area. Because some materials give off toxic fumes be sure to familiarize yourself with the metallurgy of the material, including any material behind the target metal being cut. Understand materials like glass and rock can shatter and spit. Keep oxygen cylinders and ignition systems behind you as you work. Never cut near power cables, pipes, or flammable objects. Purge pipes and containers with an inert gas (such as nitrogen or argon) prior to cutting. Ensure falling materials will not cause injury to operator, bystanders or property. Inspect the oxygen hose for damage or wear prior to and immediately following system use. Replace damaged or worn components to reduce the risk of injury. Inspect the cutting system and components prior to, and follow, use.

5. Assembly

Stand to the side when opening the oxygen cylinder valve in the unlikely event of a regulator failure. Ensure the oxygen cylinder is a safe distance from the immediate work area. Prevent sparks or molten material from coming into contact with the oxygen cylinder. Connect the oxygen regulator to the oxygen source. Purge the oxygen regulator to remove any debris by slightly opening the oxygen cylinder valve until a stream of oxygen flows through the regulator. Connect the oxygen hose to the regulator and the torch handle. Slowly open the oxygen cylinder valve and subsequently adjust the regulator where applicable. Preset oxygen regulators do not require adjustment. Adjust the flow of oxygen using the valve on the cutting torch. The greater the oxygen pressure, the longer the flame length. Check all connections to ensure there are no oxygen leaks.

Use only Magnum approved ignition sources to ignite a Magnum cutting consumable. Ensure the ignition system is a safe distance from the immediate work area. Never let cutting sparks or molten material come into contact with the battery. Never use a battery for ignition while connected to a battery charger. Always unplug the battery charger before attaching the ignition power cables to the battery. Never let live striker plates accidentally come into contact with the torch, rods, or work area as electrical shock and sparks will result. If using the Magnum cable ignition, polarity is irrelevant. If using the battery powered

ignition, the bottom plate is positive and the top “V” plate is negative. Charge ignition system batteries prior to deployment by connecting the red charging clip to the bottom plate and the black charging clip to the upper plate. The power switch must be turned “ON” for charging to take place. Understand batteries lose their charge when not in use. Do not store the ignition system in a partially discharged state. Keep batteries fresh by ensuring the float charger is plugged in to the system when not in use.

Always wear welding gloves when inserting or removing cutting consumables from the torch handle. Consumables are designed with a 2” safety recess in the torch end of the tube. Always insert the recessed end cutting tube into the cutting torch handle. Never use a damaged cutting tube. Never cut with oxygen leaking from the torch handle. To ensure an oxygen seal, a Viton washer resides behind the collet in the torch head. Leaks are prevented by pressing the consumable against the washer while tightening the torch head nut. If a leak is present, re-seat the tube against the washer. If leaks persist, inspect the washer for wear or the tube end for damage. An optional tube extender is designed for additional reach or for piercing operations to get the operator away from the splatter. Tube Extenders come in 18” or 36” lengths. Longer lengths are available upon request.

6. Operation see <http://www.magnumusa.com/operating-video.html> as a supplement to the following guidelines.

Always wear suitable protection against spark and splatter burns. Never touch a hot consumable or the live copper plates of the ignition system. Immediately remove the consumable from the copper plates upon ignition. Prolonged exposure can cause the battery to over heat and the copper prongs to become damaged. Always keep the consumable pointed away from your body and bystanders. Start the flow of oxygen by lightly squeezing the oxygen lever on the torch. The handle has a regulator that also allows the operator to feather the oxygen flow during operation. While approximately ten pounds of oxygen is flowing through the consumable, bring the consumable tip into contact with the copper ignition plates. This is accomplished by sliding the tube down and over the "V" top plate until it touches the lower plate. The resulting short will cause the consumable to spark and ignite. See the online video to view the correct ignition procedure. Oxygen must continue to flow through the consumable to remain lit. Once ignition occurs, immediately remove the consumable from the copper plates. Low oxygen pressure is best during ignition to protect the plates from damage. High oxygen flow can blow out the flame. Commence cutting, piercing or gouging according to the following directions.

Piercing: With the oxygen lever slightly depressed (low oxygen flow), bring the tip of the consumable into contact with the target material at a 90° angle and subsequently allow the tip to melt a 1/4" deep depression. Maintain the tip of the consumable in the hole while slowly increasing the oxygen flow by pulling on the torch handle trigger. Molten material will vent from the hole. A piercing extender is highly recommended to provide distance from the resulting blow back. The higher the oxygen pressure, the greater the blow back. Remove the consumable from the hole before releasing the oxygen lever to keep the consumable from becoming stuck. Consumables continue to burn only as long as oxygen is supplied. Releasing the torch lever extinguishes the consumable. For piercing a pin with control, a piece of angle iron can be welded to the pin as a guide.

Cutting: Similar to piercing, bring the tip of the burning consumable into contact with the target material. Increase the oxygen flow while keeping the consumable in direct contact with the target material. Floating the tip of the consumable results in wasted thermal efficiency and an erratic cut. Pull or push the tip of the consumable in the direction of the desired cut. Keep the tip of the consumable oriented so that the molten material does not blow back.

Gouging: With low oxygen flow, position the tip of the burning consumable at the beginning of the gouge while keeping the consumable almost flat to the plane of the target material. Increase the oxygen flow by slowly depressing the oxygen lever while a small puddle forms. Increase the oxygen pressure while pushing the tip of the consumable in the direction of the desired gouge. The greater the angle of the cutting consumable, the deeper the gouge. For deep gouging, multiple passes are preferred to a single gouge.

Storing: Relieve all pressure from the oxygen hose and close the cylinder valve prior to disassembling the system. Cover the hose ends to protect from foreign matter. Inspect all components for damage or wear. Replace as necessary. Ensure the ignition system is connected to the float charger. Store the system in a dry place.

8. Call 1-800-957-4344 for all related **troubleshooting** assistance.

9. **Service and repairs** are performed by the factory. Call to return the unit to Magnum for service or repair of parts and or components. Magnum Sea and Land shall not be held liable for any damages related to its products nor does Magnum Sea and Land express or imply any equipment warranties.