TEC Torch™

Cutting Torch for Tactical and Rescue Operations

Operating Instruction Manual

Part Models: C110 | C210
H200 | H300
CC-3 | XT6 | PIG4x2

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Section 1. General Information and Safety Precautions

1.1. Thermal Breaching

Thermal breaching is a technique that utilizes high temperature devices to melt, cut, or burn away mechanisms or obstacles to gain access to a secure area. The TEC Torch™ is one of the first technologies to harness this energy safely in a compact handheld device. This tool uses thermites which are solid fuel and oxidizer mixtures generating reaction temperatures exceeding 5000°F. This manual will describe the safety precautions, operating procedures, and recommendations for successful application of the TEC Torch™ system.

Prior to use, ALL personnel should be trained in proper handling, storage, and operation of the TEC Torch™ and its accessories.

1.2. WARNINGS

To avoid serious injury or death, all personnel shall heed these warnings.

1. Never point the torch at one’s self, another living being, or at highly flammable objects.

2. Never modify the equipment in any manner or use it in any way not specified in this manual.

3. Never operate equipment that is damaged or deformed. Consult OEM prior to using equipment past the expiration date.
4. Never remove, hide, or alter the warning labels attached to this equipment.

5. All users and their supervisory personnel must read and be thoroughly familiar with this manual prior to using the equipment.

6. Always apply and adhere to ANSI/ASC Z49.1-88 Safety in Welding and Cutting Standards

7. Never operate the torch when under the influence of drugs (prescription or recreational) and/or alcohol.
1.3. SAFETY PRECAUTIONS

Use or misuse of this equipment may result in death, severe bodily injury, or severe property damage. Always protect yourself and others when using this equipment. Fumes and gases developed from the use of this equipment may be dangerous to your health. Light emission and splatter can injure eyes and exposed skin.

1. Always clear the work area of bystanders.
2. Always clear the work area of flammable materials.
3. All personnel in close proximity must wear adequate protective clothing, hats, footwear, eyewear, and gloves when using this system.
4. Never operate this equipment without proper face and eye protection.
5. Always extend the torch as far as possible from the operator, prior to ignition.
6. Always keep the torch (lit or unlit) pointed away from your body.
7. Always keep the torch (lit or unlit) pointed away from unburned cartridges to prevent sympathetic ignition.
8. Always keep the cartridge or extension cable disconnected from the handle until the moment before immediate use.

9. Always keep the handle Arming Switch in the OFF/SAFE position prior to inserting any cartridge or extension cable.

10. Always use extreme caution when operating the torch in adverse environmental conditions (high wind, etc).

11. Always know composition of the target material.

12. Always know what is behind and around the target material.

13. Always keep your head away from the fume plume.

14. Always use in well-ventilated area to keep fumes and gases away from your breathing zone.

15. Always allow cartridge burn to fully cease prior to disengaging from the handle.

16. Beware of extremely hot temperatures of the cartridge after the burn has completed.

After use, cartridges may be disposed of as standard non-hazardous waste. Allow cartridges to complete cool prior to disposal.

1.4. Equipment

The TEC Torch™ is a fast and portable cutting tool designed for military, law enforcement and first responder users. The TEC Torch™ consists of two main components: the electric handle and a reactive cartridge. Additional
accessories are available such as remote-mounting Claw Clips, extension cables, Splitter cables, and storage boxes.

The C110 cartridges are designed for optimum cutting of rods, bars, wire rope, and tubing up to 3/4” diameter or depth. The torch has been proven affective against numerous steel alloys (such as plain carbon, stainless, hardened, coated, and painted), aluminum alloys, brass, and will likely work against most metallic targets.
The C210 cartridges are designed for optimum cutting of plates up to ½” thickness. This cartridge provides an angled head to align the cartridge for the most efficient cutting performance.

C110 and C210 cartridges burn for approximately 2.0 seconds and cannot be stopped once activated. Cartridges can only be used once and are disposable. Cartridges are rugged and will function underwater.

The H200 and H300 handles are fabricated from durable and heat-resistant plastics. Both handles are water resistant. The H200 are operated via pushbutton Arming Switch and pushbutton momentary Firing Switch and are powered by a single 9V battery. The H300 handle is operated via a rotating Arming Switch and a sliding Firing Switch protected by a sliding cover and is powered by two (2) CR123A batteries. The batteries will fire 100’s of cartridges but are also replaceable when needed.

All cartridges and accessories are designed to be universally operated with any handle.
**H200**

(Top)
FIRING Switch

(Front)
Cartridge Receptacle
Electrical connector

(Rear)
ARMING Switch with LED

**H300**

ARMING Switch
Rotary SAFE/FIRE

Sliding cover - CLOSED

Top FIRING Switch
(cover open)
Preparing the Work Area

**WARNING**

Never operate torch near explosives, hydrocarbon fuels, or similar. Use extreme caution when operating the torch combustible materials such as textiles, leaves, etc.

Never cut into unknown material. Exotic metals may ignite. Glass and thin porcelain may shatter. Rock, minerals, and concrete may spall.

Never operate the torch with personnel or bystanders in front of the torch or in the immediate work area.

Verify area is well ventilated. Some plastics, paints, and plated parts give off toxic fumes.

When a target is surrounded by or near wooden structures, minor fire or smoldering may occur.

1.5. **Pre-use Inspection**

**WARNING**

Never use any equipment which is unsafe or appears to be unsafe. Properly dispose of damaged or worn components to reduce the risk of injury.

Never use a torch cartridge with punctures, dents, or discoloration of the exterior shell.

For safe operation, verify that the nozzle is covered with either a clear/opaque plastic shield or aluminum tape. For
reliable operation, verify that the cartridge rear jack is clear of debris and not corroded, damaged, or deformed.

Verify that the cartridge rear cylinder that inserts into the handle is round, smooth, untarnished, free of burrs and that the o-ring is installed and not cracked or broken.

For reliable operation, verify that the handle plug is clear of debris and not corroded, damaged, or deformed. Verify that the receptacle body is round, and free of debris, and burrs and is not cracked or damaged. It is recommended that the battery be removed during storage to prevent corrosion and aging inside the handle. When possible, install a new battery immediately before field use.
Section 2. Handheld Operation

⚠️ WARNING ⚠️

Never point the cartridge nozzle towards anybody, even when disengaged from the handle.

Always ensure that the handle Arming Switch is in the OFF/SAFE position when installing the cartridge.

Always wear protective flame resistant clothing (gloves, long sleeve shirt, pants, closed toe shoes, and hats) when handling or operating the torch components.

Always wear safety glasses when handling or operating torch components.

Never fire a cartridge without adequate restraint on the cartridge and handle. The escaping torch flame will create a reaction force with possible loss of control resulting in severe injury or death.

2.1. Cartridge Insertion

Remove the shipping caps from the front and rear of the cartridge and dispose of properly or return to manufacturer. With the Arming Switch in the OFF/SAFE position, hold the cartridge in one hand and the handle in the other. Insure the sliding cover is in the CLOSED position over the Firing Switch (H300 only).
H200

OFF

ON
Ensure that the nozzle is pointed away from yourself and others. Ensure that hands and fingers are not activating the Arming Switch or the Firing Switch on the handle.

Firmly press the cartridge rear into the receptacle of the handle until overlapping the o-ring and fully seated. In some instance a slight rotation during pressing will aide in proper seating of the cartridge.
Proper seat position
Rotate the cartridge relative to the handle Firing Switch for convenient and safe orientation to the target.

Practicing these motions in advance with an INERT cartridge will improve speed and concise movements. Predicting the ergonomics of the handle position relative to the target will allow the user to direct the torch jet in the safest directions.

2.2. C110 Rod Target Alignment

The C110 is manufactured with a unique nozzle and two v-shaped alignment tabs on the front of the cartridge. These features provide optimized cutting for metal targets up to 3/4 inch in cross-section.

Bring the cartridge to the target bar, with the bar spanning the gap between the two v-notches. Ideally, the cartridge will be perpendicular to the target bar when both v-notches are seated and making contact.
For curved bars (like the shackle on a padlock) try to orient the torch perpendicular to the point of contact.

In some cases it is recommended to aim the torch in a downward direction if proper alignment is achievable. If the target mechanism is on a door face or in a door frame (as either surface may reflect flame, sparks, and hazardous
fumes). this technique will reduce reflection and splash-back to the user and nearby personnel.

2.3. **C210 Plate Target Alignment**

The C210 is manufactured with a unique nozzle and four pillars or tabs on the front of the cartridge. These features are designed for optimal penetration of a ½” thick metal plate. These features will help the user maintain an optimized angle of 75° from the plate.

Bring the cartridge to the target plate, with all 4 pillars contacting the plate. When positioned correctly, the cartridge and handle should be 15° from perpendicular to the plate.
Consider the angle orientation and direct your flame safely. All target surfaces will generate reflecting flame, sparks, and fumes until full penetration is achieved.

2.4. Ignition & Cutting

It is recommended, to activate the Arming Switch immediately prior to approaching target. Function the Arming Switch to the ON or FIRE position. Slide the Firing Switch cover into the OPEN position (H300 only). Once fully aligned and seated, push the torch firmly into the target. Function the Firing Switch by depressing (H200) or sliding (H300) the button. Expect immediate noise, flame, and minor recoil.

Keep the torch as motionless as possible for the full duration of the burn.

2.5. Cartridge Removal

For several minutes after the burn, the target and its surrounding surfaces will be EXTREMELY HOT. Use
appropriate tools (pliers, pry bars, etc) or adequate layered heat resistant gloves to handle the target.

For several minutes after the burn, the cartridge shell will be **HOT**. To remove the cartridge, pull the cartridge free from the handle in reverse direction of the insertion. In some instances, a slight rotation will aid in reducing the pull force. It is recommended to grasp the cartridge near the rear (closest to the handle) as this section will be cooler temperature than the nozzle end.

*Separating the cartridge and the handle quickly after the burn has extinguished will help prevent thermal damage to the handle.

**Section 3. Remote Operation**

**WARNING**

Never point the cartridge at anybody. Ensure that the Claw mounted cartridges have not slid, rotated, or detached prior to ignition.

Always ensure that the handle Arming Switch is in the OFF/SAFE position when handling cartridges and connecting command wires.

Always wear protective flame resistant clothing (gloves, long sleeve shirt, pants, closed toe shoes, and hats) when handling or operating the torch components.

Always wear safety glasses when handling or operating torch components.

Never fire a cartridge without adequate restraint on the cartridge and handle. The escaping torch flame will
create a reaction force that may cause loss of control resulting in severe injury or death.

Remote operation is possible for all cartridges but currently, no mounting hardware is offered for anchoring the C210 to a plate target. The Claw Clip discussed below is designed ONLY for attaching the C110 to rod and bar targets.

3.1. Mounting Claw Assembly

Remove the front and rear shipping caps from the cartridge. Insert the rear end (with the electric jack) into the notched end of the Claw Clip (1). The cartridge should slide freely through the bore until the rim seats on the c-ring at the opposite end.

3.2. Target Attachment

The Claw Clip can be extended by grasping the rear and the front tube sections by hand and stretching the middle springs. With claw side notch extended past the v-notch posts of the cartridge, the target bar can be inserted through the side notch. Releasing one or both ends of the Claw Clip will compress the springs, clamping the target bar into the v-notch position. In some instances, a slight adjustment
may be required to seat the target rod at the base of the v-notch.

At this point, the cartridge should be adjusted and aimed appropriately to minimize injury and property damage.

3.3. Wiring

Insert the plug end of the extension cable into the rear end jack of the cartridge. Stretch the cable to a safe distance. Keeping your thumb clear of the firing button, plug the jack end of the cable into the handle and press until fully seated.

When connecting multiple remote fire cartridges, you must use a Splitter Pigtail cable. Current handle designs will reliably operate up to four (4) cartridges
simultaneously. After mounting 2-4 cartridges using the Claw Clip, install the plug ends of the Splitter into rear of each. Then connect the single extension cable to the jack end of the Splitter and step back to a safe distance.
3.4. Ignition & Cutting

Function the Arming Switch to the ON/FIRE position. Visually verify that all cartridges are intentionally aimed and wiring is connected. Function the Firing Switch and expect an immediate flame. In some instances, a 1 second delay may occur when initiating multiple cartridges with the splitter. To ensure proper ignition, continue to depress the firing button until all cartridges have fired.

WARNING – During the burn, the cartridge may release from the target as the target is damaged or cut. This cartridge can emit hot flames and sparks in an erratic motion causing injury, death or property damage.

3.5. Cartridge Removal

After the burn is completed, approach the cartridges cautiously. For several minutes after the burn, the target and its surrounding surfaces will be EXTREMELY HOT. Use appropriate tools (pliers, pry bars, etc) or adequate layered heat resistant gloves to handle the target. For several minutes after the burn, the cartridge shell and Claw Clip will be HOT.

In some instances, the Claw Clip will be destroyed and the cartridge may have fallen away from the target. In some instances, the target will be cut but the two separate pieces will be held in position by the Claw Clip. The Claw Clip can be removed by simply extending the spring mechanism freeing the target rod from the clamp notch.
Section 4. Maintenance, Storage & Disposal

4.1. **Handle Battery Installation / Replacement**

Either battery configuration allows for the firing of at least 100 cartridges. If the battery is damaged, corroded, expired, or anticipated near the end of life, it should be replaced.

**For the H200:**

Unscrew the rear of the handle until the cup section is clear. Remove an existing battery by pushing from the back side through the small opening. Insert a new battery by first seating the non-terminal corner in the pocket near the Firing Switch end. Then rock the terminal end into the pocket until fully seated. The battery terminals should make a good connection with the spring terminals of the handle.

Note the polarity indicated on the handle. The Arming Switch LED requires a certain specific polarity to function. If the LED does not function simply, reverse the battery terminals.

**For the H300:**
Unscrew the rear nut and pull the rear of the handle until it releases from the main body. Remove the two CR123A batteries; they should fall out freely once the rear has been removed. Insert two new batteries into the main body cavity. Note the polarity indicated on the handle; the negative terminal must be downward in the cavity for proper firing circuit function.

Reinstall the rear (the rear can only be installed in a single orientation) to the main body and tighten the rear nut to hand tight.

4.2. Storage and Transport

The C110 and C210 TEC torch cartridges are currently classified by a Department of Transportation (DOT) Interim Hazard Class (IHC) as 1.4G, UN0431, Articles Pyrotechnic.

Cartridges must be stored and secured as regulated by your local, state, federal, or prevailing authority. TEC Torch devices should not be handled, possessed, or operated by untrained personnel.
Cartridges should only be transported and shipped in accordance with 49CFR.

It is recommended that cartridges be stored in a rigid sealed canister as offered by the manufacturer. The ideal packaging will offer protection from exposure and moisture. Packaging should also provide vibration cushioning via individual foam, paper, or similar wrapping.
Cartridges should never be stored in metal containers.

Cartridges should never be stored near heat sources such as large batteries, engines, etc.

Cartridges should never be stored near flammable items such as gasoline, propane, etc.

4.3. Disposal

When fully burned, cartridges are considered inert and no longer a hazardous material. These can be disposed of in accordance with local, state, and federal regulations (regulations for what? Aluminum? Contact the OEM for options of returning fired cartridges for recycling.

Unburned, damaged, or defective cartridges should be destroyed prior to disposal. NO attempt should be made to dissect or dismantle unburned cartridges due to the risk of unintentional ignition causing injury or death. Destruction of unburnt cartridges can be carried out by trained EOD operatives following procedures of explosive residue disposal. If EOD operatives are unavailable please consult with the manufacturer or distributor before proceeding.

4.4. Troubleshooting

4.4.1. Cartridges will not Fire in handheld operation

- Verify that a good battery is installed in the Handle.
- Verify polarity of battery is correct.
- Verify that the handle plug is clear of debris and in good condition.
- Verify that the cartridge rear jack is clear of debris and in good condition.
• Ensure that the cartridge is fully seating into the handle receptacle.

If all of the above items are checked and unit won’t fire, then try a different cartridge following the guidelines in Section 2.

If the handle and cartridge still do not function, contact the manufacturer.

4.4.2. **Cartridges will not Fire in command line operation**

• Verify that a good battery is installed in the Handle.

• Verify polarity of battery is correct.

• Verify that the handle plug is clear of debris and in good condition.

• Verify that each cartridge rear jack is clear of debris and in good condition.

• Verify that all plug and jack linkages are clear of debris and in good condition.

• Verify that all wiring is not cut, worn nor loose from the plugs and jacks and those items are in good condition.

• Ensure that all plug and jack connections are fully seating.

• No more than four (4) cartridges can be fired by a single handle. Currently, the Splitter Pigtail configures cartridges in a parallel electrical circuit such that one unit can function independently of all others. For example, one may fire even if a
connection of malfunction occurs in an adjacent unit.

- No more than 30ft of extension cable is being used.

If all of the above items are checked, then and the system still does not function, contact the manufacturer.

4.4.3. Cartridge will not seat into handle receptacle.

- Attempt to seat a different cartridge.

- If neither cartridge seats, then the Handle receptacle or plug may be damaged or deformed. Contact the manufacturer.

- If the second cartridge seats correctly, then the first cartridge rear extension or rear jack may be damaged or deformed. If only the rear extension is simply damaged or burred, the unit can easily still be used with a Claw Clip for remote usage according to Section 3.

- If the cartridge is deemed unfit, contact the manufacturer for return or disposal instructions.
4.5. WARRANTY INFORMATION

EXPRESS LIMITED WARRANTY

Energetic Devices, LLC (the “manufacturer”) warrants that the TEC Torch™ product (the “Product”) will be free from significant defects in materials and workmanship under normal use and service for a period of one year from the date of purchase (the “Warranty Period”). This limited warranty is non-transferrable and applies only to the original purchaser of the Product. This limited warranty also applies only when the Product is used in accordance with the this manual.

This limited warranty covers all defects encountered in normal use and service but does not apply if: (1) the Product is modified or tampered with or disassembled, (2) the Product is damaged by an Act of God, misuse, abuse, neglect, accident or mishandling, (3) the Product is not stored, used or maintained in accordance with the accompanying user documents, or (4) the serial number on the Product is defaced, altered or removed.

Your exclusive remedy for breach of this limited warranty during the Warranty Period shall be, at the option of the manufacturer, the repair or replacement of the Product. Warranty repair or replacement shall not extend exceed the original Warranty Period.

All returns for warranty service will require an RMA (Return Merchandise Authorization). To receive an RMA for obtaining warranty services, you must call


In addition, if the Product has not been registered, you must submit proof of the date of original purchase such as a
copy of your dated invoice and must insure, pack and ship the Product to an authorized service center in accordance with manufacturer’s instructions within 7 days after your receipt of an RMA. The packing must include your RMA. RMA’s will not be extended or reissued.

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