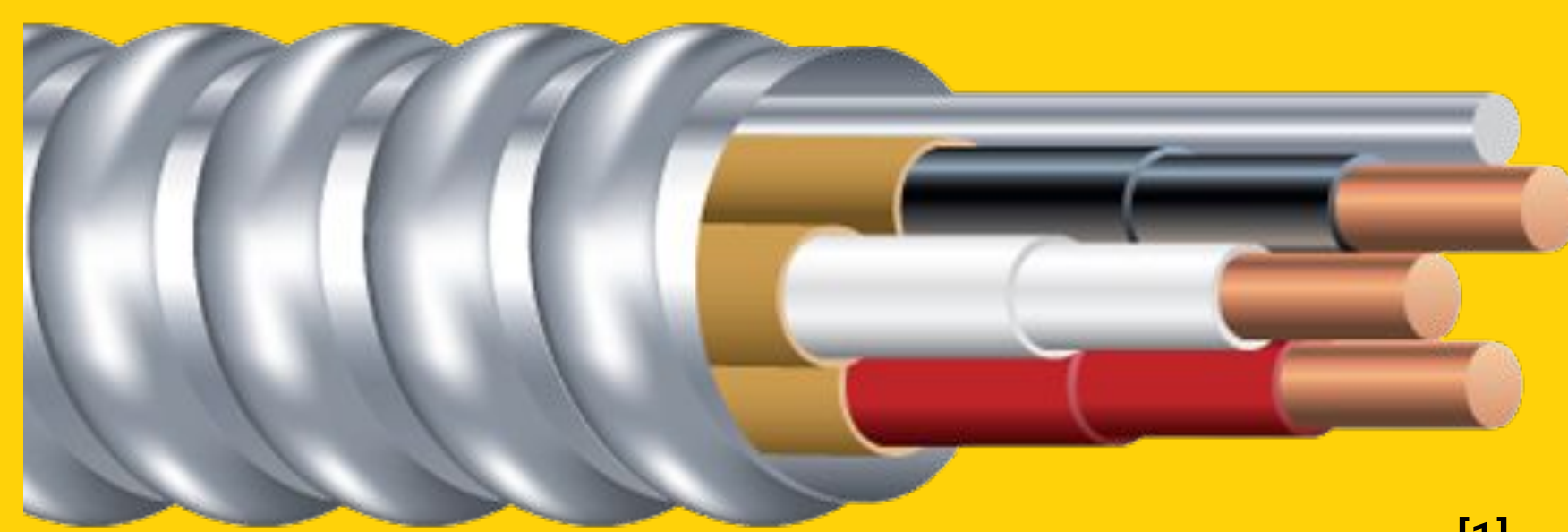


# SBD-MC23: Novel Tool for Cutting MC Cable

D.T. Comer, G.J.G. Mackay, A.S. Miller, M.W. Montisano  
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## 1. Background

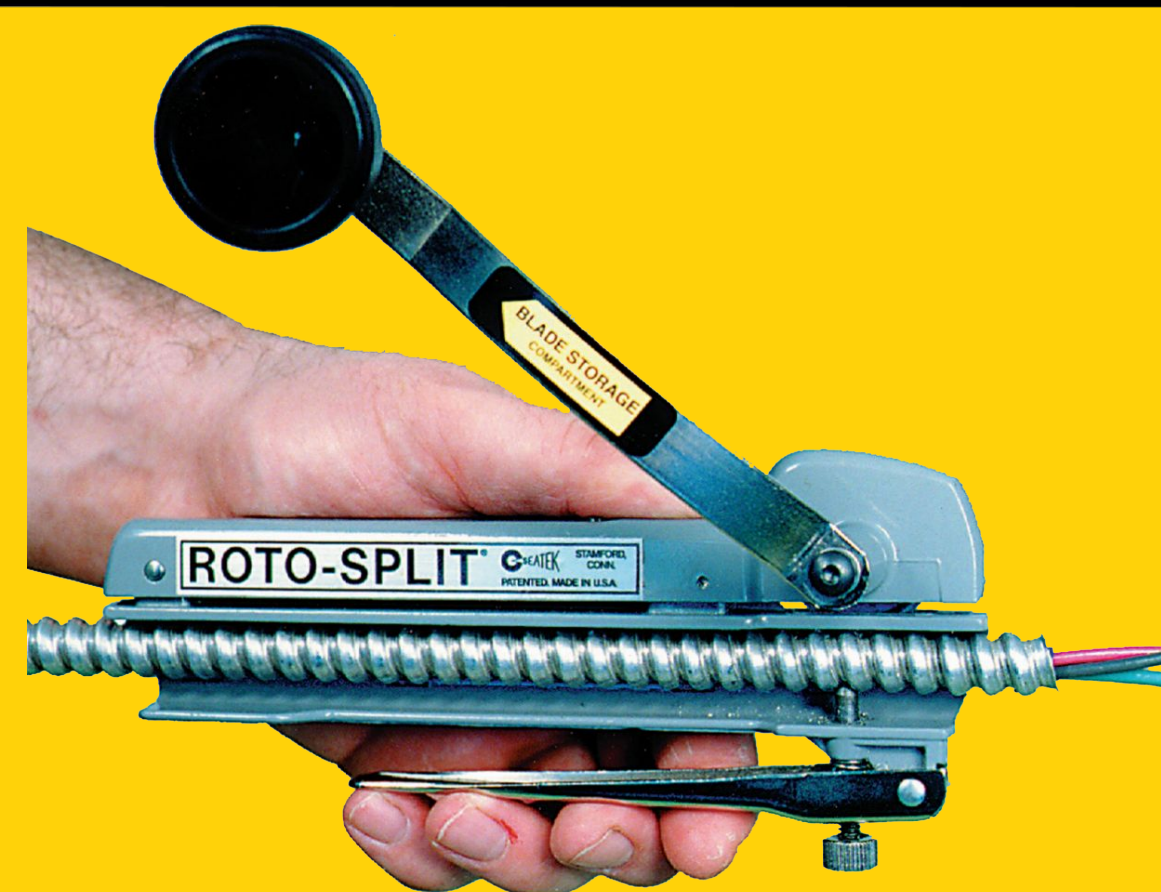
MC Cable is comprised of a helical metal conduit wrapped around electric wires, commonly used in home and office electric systems, usually made from aluminum or steel.



MC Cable Cross Section [1]

Cutting conduit requires use of a Southwire Roto-Split® or similar product. Stanley Black and Decker (SBD) tasked us with creating a new tool to overhaul the existing design.

## 2. Industry Standard



Original Southwire Roto-Split® [2]

The Roto-Split® is the widely emulated industry standard conduit cutter. The user spins a rotary saw blade which cuts the conduit axially. It is bulky, heavy, and uncomfortable to use. Significant grip force is required to clamp the MC

cable due to its dual lever design. This leads to user fatigue when making multiple consecutive cuts. The fixed rotary handle is cumbersome when carrying the tool, since it can swing around freely and does not fit easily into tool belts or pockets.

## 3. Project Requirements

### Quantitative

Aluminum conduit size range - 3/8" to 1/2"

Final weight under 1lb

10% Overall packaging reduction compared to Roto-Split®

Mechanical advantage > 1

### Qualitative

Cut conduit w/o harming wires

Improved ergonomics

Fit easily into electrician's tool belt

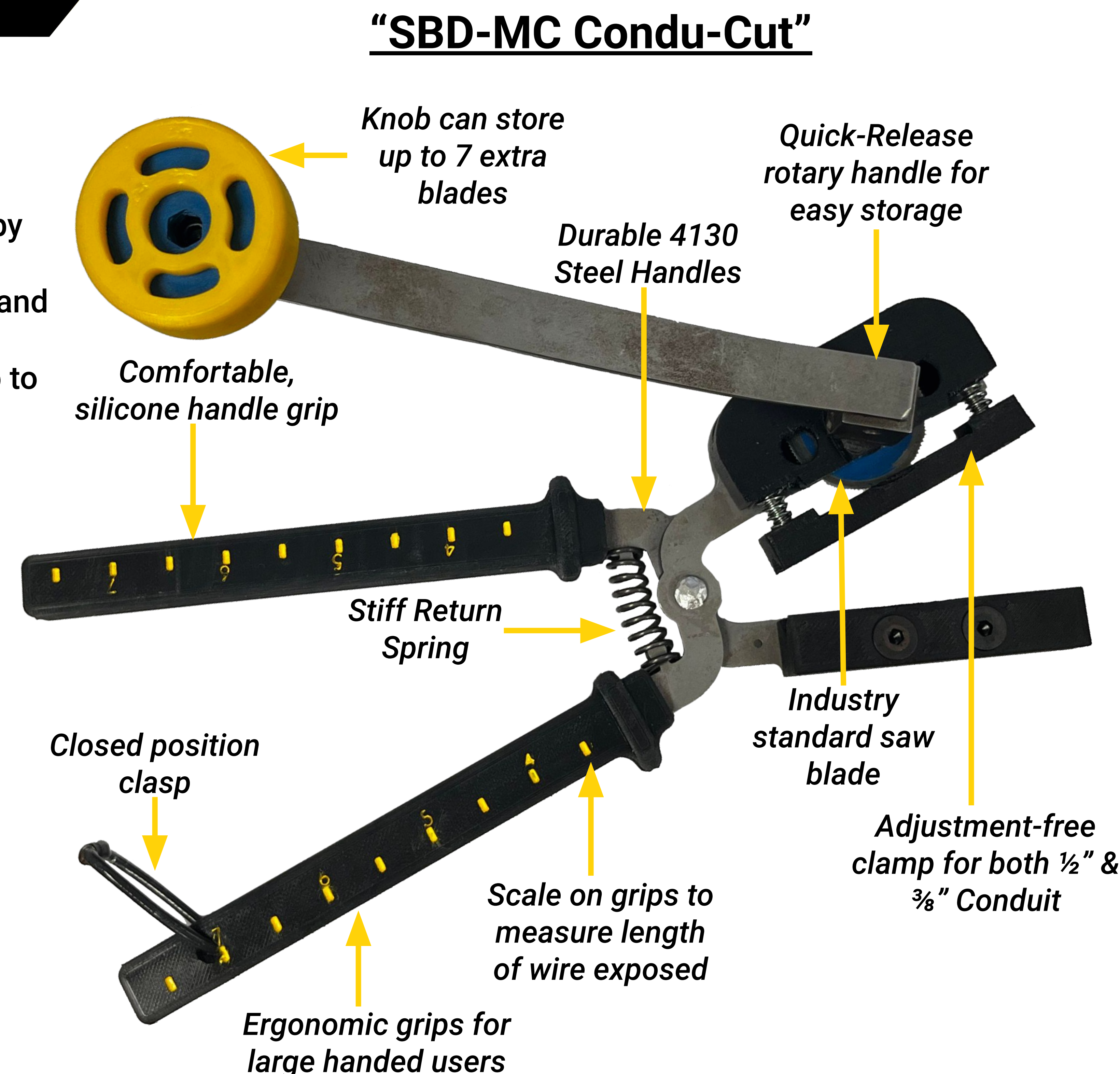
Multifunctional elements (SBD)

## 4. Our Solution

The SBD-MC Condu-Cut takes the familiar cutting mechanism from a Roto-Split® and packages it into a comfortable plier-handle shape. The Roto-Split® design is improved by both a Quick-Release handle, which enables easy storage into tool belts and pockets without the rotary handle swinging, and a spring loaded clamp to allow for the cutting of a range of conduit sizes without any manual adjustment.



Condu-Cut being used on 3/8" aluminum conduit in a drop ceiling environment.



Condu-Cut fits snugly into pliers slots in electrician's tool bags.

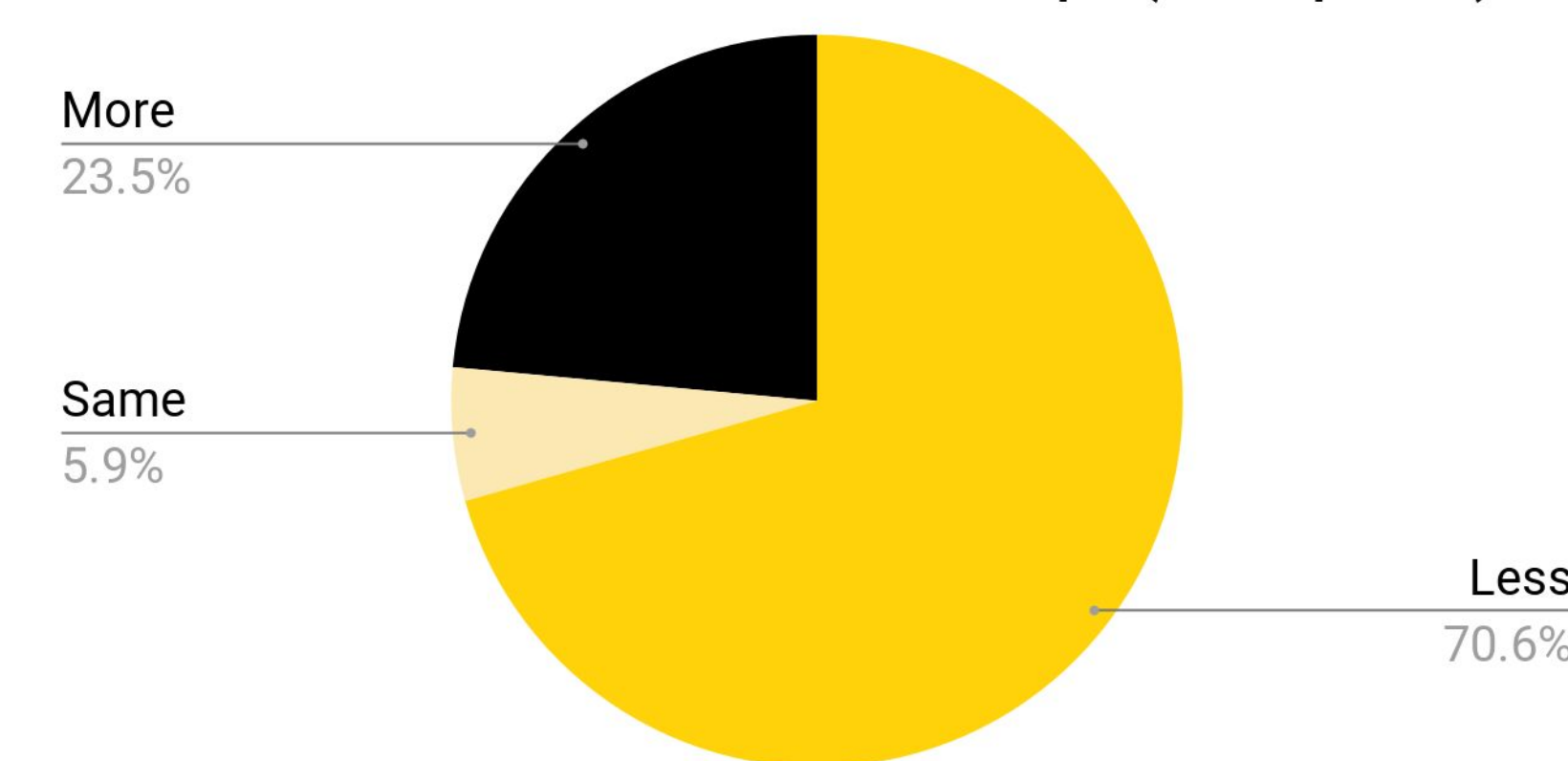


Quick-Release uses a ball-spring plunger and a standard 3/8" female socket.

## 5. Performance

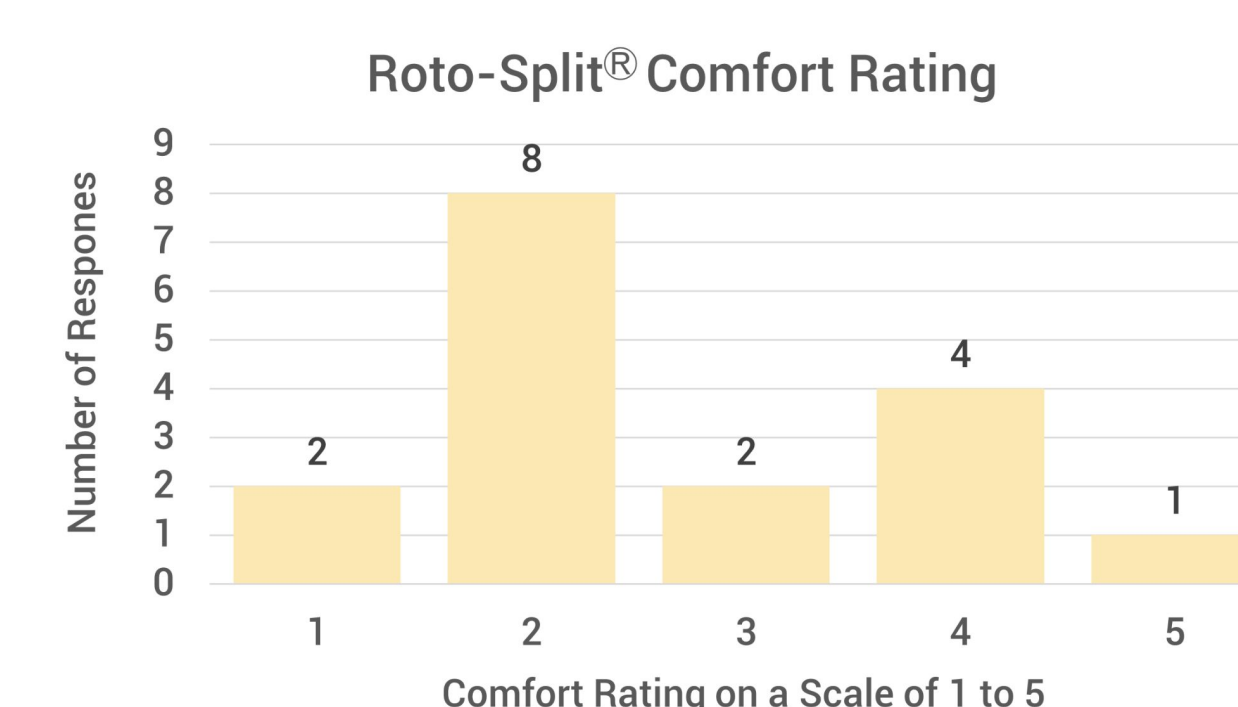
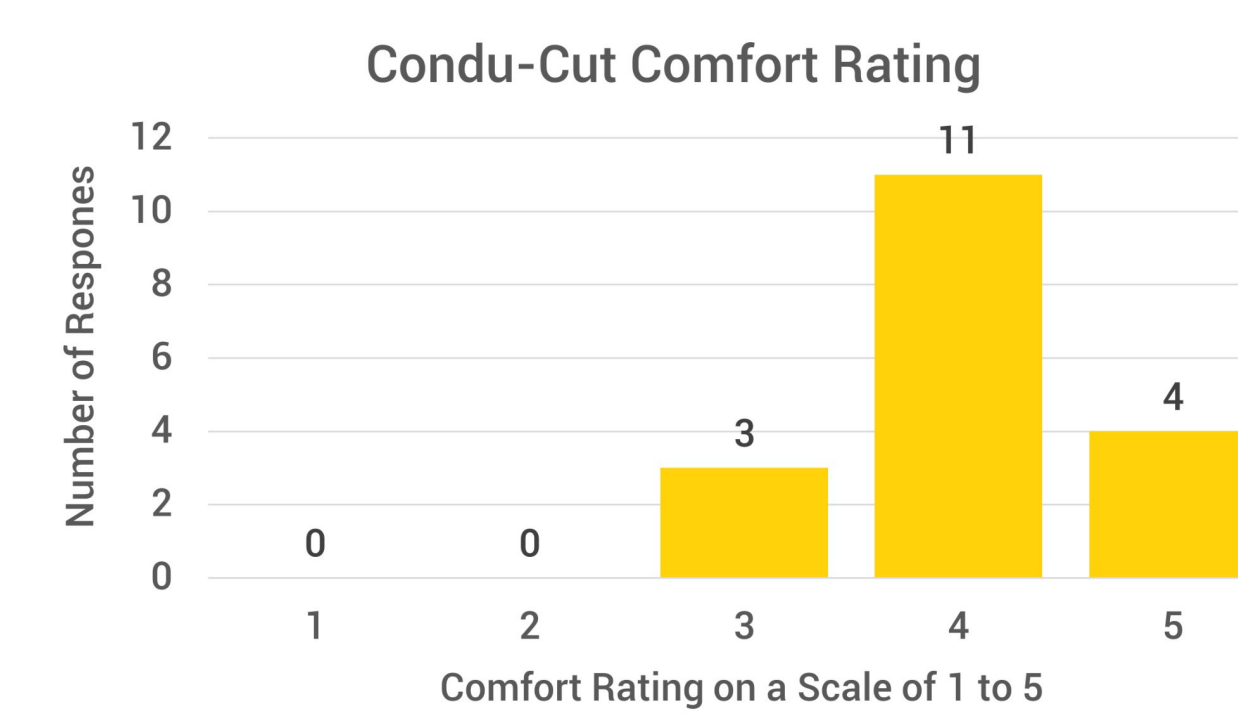
- Significant reduction in required clamping force
- Comparable cut time and quality to existing tools
- More comfortable to use for multiple consecutive cuts

Force Used On Condu-Cut Relative to Roto-Split (17 Responses)



## 6. Ergonomics

- Silicone handle grip reduces palm and finger discomfort
- Plier body employs user familiarity for more intuitive use
- Quick-Release rotary handle allows for easy tool storage and use of alternative handles in tight spots



Tool Features	Roto-Split®	Condu-Cut
Cuts aluminum 1/2" and 3/8" conduit	✓	✓
Rotary saw for quick and clean cut	✓	✓
Basic blade storage	✓	✓
Ergonomic handles	✗	✓
Built-in ruler	✗	✓
Stores up to 7 blades	✗	✓
Detachable handle	✗	✓
Adjustment free clamp	✗	✓

## 7. Electrician Feedback

Getting the Condu-Cut to electricians was critical to verifying that the tool is worth using. 9/10 electricians surveyed preferred the Condu-Cut to the Roto-Split®.



"[The spring loaded clamp] makes life so much easier!"  
- JHU Facilities Electricians

Feedback Metric	P.E. Survey Average Result
Storage	Good
Grip Feel	Excellent
Overall Comfort	Good
Maneuverability	Good
Durability	Good
Grip Effort	Minimal