

# Superwhip™ Quick Break Interrupter

The Superwhip™ interrupter is another technical breakthrough for interrupting the capacitive line charging current of long transmission lines. Using Polywhip™ technology, Cleaveland/Price has now learned how to accelerate an all metal whip to higher speeds than ever before. Proprietary metal alloys and dimensional optimization through years of high speed analysis have advanced the state of the art of whip design.

The advantage of the Superwhip™ over other quick break whip designs is the extraordinary speed of the device and its resistance to deterioration from outdoor elements. The whip applies new technologies that enable the whip to extinguish the arc at current zero and travel so fast that it establishes an open gap faster than the voltage can increase to cause a re-strike.

Because the interrupting capability of the Superwhip™ is so high, transmission line switching sites can be located farther apart without the need for expensive vacuum or SF<sub>6</sub> interrupters. The whip is also very useful to interrupt capacitive current on lines that have a greater than calculated capacitive current value due to capacitive coupling from nearby higher voltage lines.

The Superwhip™ is available for use on Cleaveland/Price center break CB-AV, vertical break V2-C/A, and hookstick operated ILO-C switches rated 69 kV through 161 kV. Consult the factory for the availability of the Superwhip™ on other Cleaveland/Price switches.



The above photo is of an actual line charging interruption event on a 115 kV circuit using a traditionally designed whip. During the switch opening there were eleven re-strikes because the whip was too slow. The photo below shows the typical difference using a Superwhip™ interrupter.



Shown is a typical line charging interruption using the Superwhip™. The whips interrupted the circuit without a re-strike. The arcs were fully extinguished within 8 milliseconds.

***CP* Cleaveland/Price Inc.**

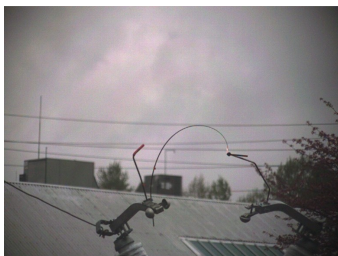
14000 Rt. 993, Trafford, PA 15085 (724) 864-4177

FAX (724) 864-9040

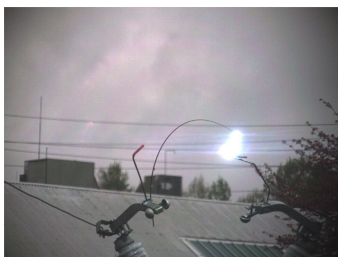
E-mail: [sales@cleavelandprice.com](mailto:sales@cleavelandprice.com)

## Speed is the key to successful interruption of line charging currents.

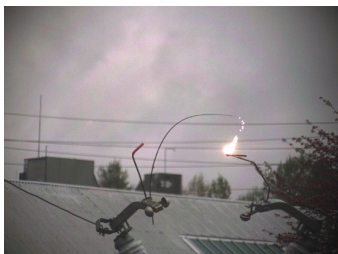
The Superwhip™ delivers the speed you need. The sequence of photos below show actual laboratory interruption on a 145 kV line with 46.3 amps of capacitive current using the Superwhip™.



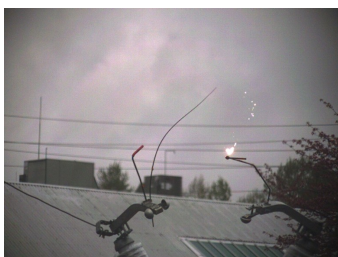
**0 millisecond**  
Whip contacts are just about to separate.



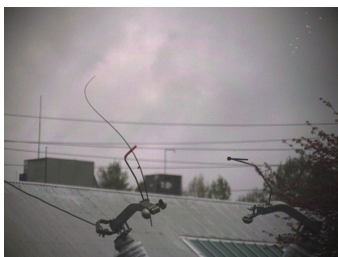
**4 milliseconds**  
The arc is at full length.



**6 milliseconds**  
The arc starts to extinguish.



**10 milliseconds**  
The arc is completely extinguished.



**48 milliseconds**  
The whip has fully opened without re-strike.



The Superwhip™ on a 138 kV CB-AV switch

The Superwhip™ can be installed on Cleaveland/Price group operated switches. The switches could be mounted in side-by-side, phase-over-phase, or phase-opposite-phase arrangement.



The Superwhip™ on a 115 kV phase-over-phase V2-CA switch

The Superwhip™ can be installed on hookstick operated Cleaveland/Price ILO-C in-line switches. A 138 kV switch with whip is shown below.



Superwhip™ Line Dropping Capability				
System Voltage / Max. Voltage kV *	69 / 72.5 kV	115 / 123 kV	138 / 145 kV	161 / 170 kV
Approximate line length	163 miles	104 miles	89 miles	43 miles
Current	45.9 A	45.9 A	46.3 A	26.2 A
* Grounded neutral system. For ungrounded systems, use the next higher voltage whip.				