

Clearing Time For Viper[®]-ST and Viper[®]-SP

Definition of Clearing Time

The dual logo recloser standard IEEE C37.60 / IEC 62271-111 provides a time line (Figure 1) that defines Clearing Time as the sum of the following times:

$$\text{Clearing Time} = \text{Release Delay} + \text{Opening Time} + \text{Arcing Time}$$

- Release Delay is the time it takes the recloser control to detect fault current, activate the corresponding programmed protection element, and send the trip command to the recloser. This includes the time over-current curve.
- Opening Time is the time from the moment the magnetic actuator is energized to initiate the trip operation to the time the vacuum interrupter contacts part.
- Arcing Time corresponds with how long it takes the vacuum interrupter to extinguish the arc.

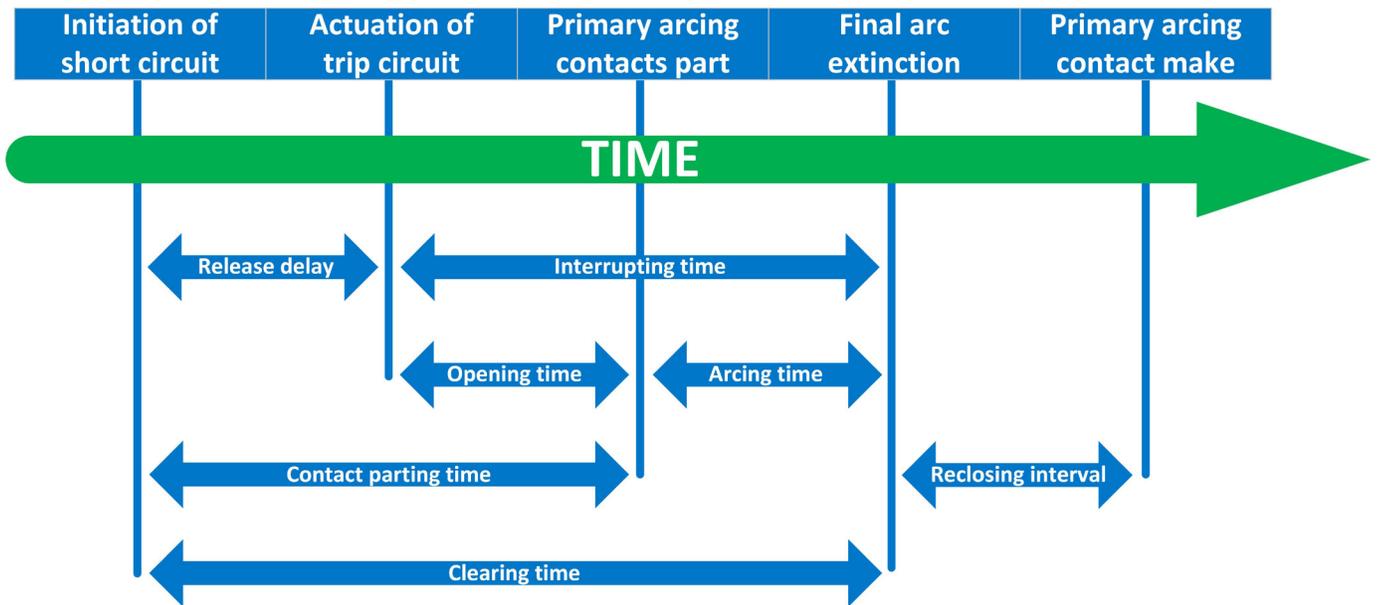


Figure 1: Graphical representation of Clearing Time

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Clearing Time

Viper-ST and Viper-SP

The Clearing Time as shown in the table below is the same for the Viper-ST and Viper-SP. This timing considers an instantaneous trip command from the recloser control that corresponds to the minimum time delay response from the relay.

Description	Times	
	ms	Cycles (60 HZ based)
Release Delay	8	0.5
Opening Time	30 (±5)	2.0
Arcing Time	8 (±4)	0.5
Total Clearing Time	46 (±9)	3.0



Factory Testing

This Clearing Time above does not take into account any Time Over-Current curve, which depending on the fault current magnitude and curve type, may delay the timing of the trip command to the recloser up to several seconds.

The Viper reclosers are system-tested with their recloser control and control cable. In order to guarantee proper operation within the Clearing Time performance, G&W performs routine tests per the above mentioned recloser standard and includes individual phase timing checks, synchronicity, endurance, minimum current pickup tripping, and 4-shot sequence time over-current tests.

