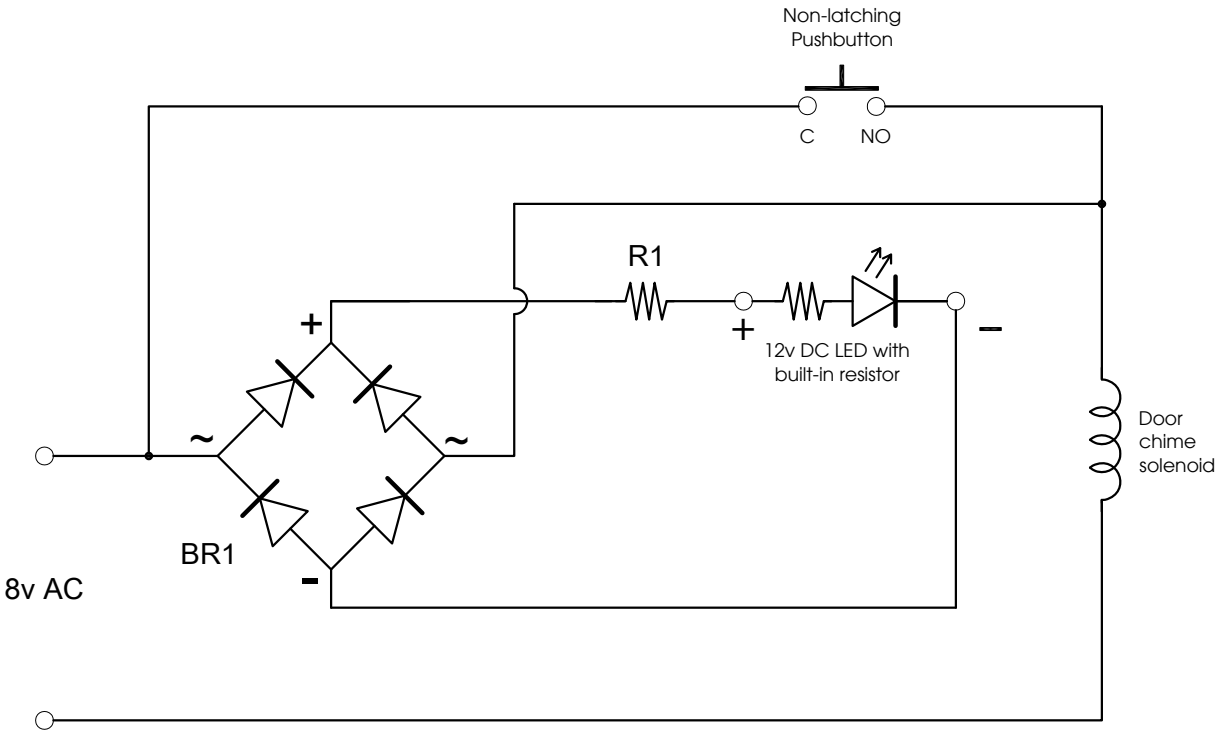
Wiring up a doorbell using a pushbutton with integral LED

LEDs are intended for use with DC power supplies and applying a reverse polarity, such as one half of an AC waveform, may shorten their life. It all depends on how the peak reverse voltage compares to the reverse voltage limit of the LED (a value that is seldom provided in the LED specification). It is safer to provide a rectified DC power supply for the LED, such as the full-wave bridge rectifier solutions shown below.

Option 1: Solenoid in series with rectifier, using standard doorbell wiring

This version of the circuit assumes use of conventional doorbell wiring, where only two wires go from the transformer to the bell and only two wires go from the bell to the bell push. Pressing the pushbutton applies AC power to the solenoid and thus operates the chimes. The LED goes out while the button is being pressed.

The only issue with this arrangement is that the continuous small current flow through the solenoid has been reported as causing reduced battery life for wired-to-wirefree extenders that are connected across the solenoid to sense when the bell is ringing (to operate additional bells) .



Option 2: Solenoid in parallel with rectifier, requiring extra wire

This version of the circuit connects the bridge rectifier directly to the bell transformer output, rather than via the solenoid. This requires an additional wire to the bell (or to the transformer), but it comes with the benefit of zero current flow through the solenoid when the button is released (just as with non-illuminated bell pushes). This allows use of wired-to-wirefree extenders (such as the **Grothe Mistral 600PSE**) without having a constant small drain on its batteries.

In this case, the LED pulsates while the button is being pressed.