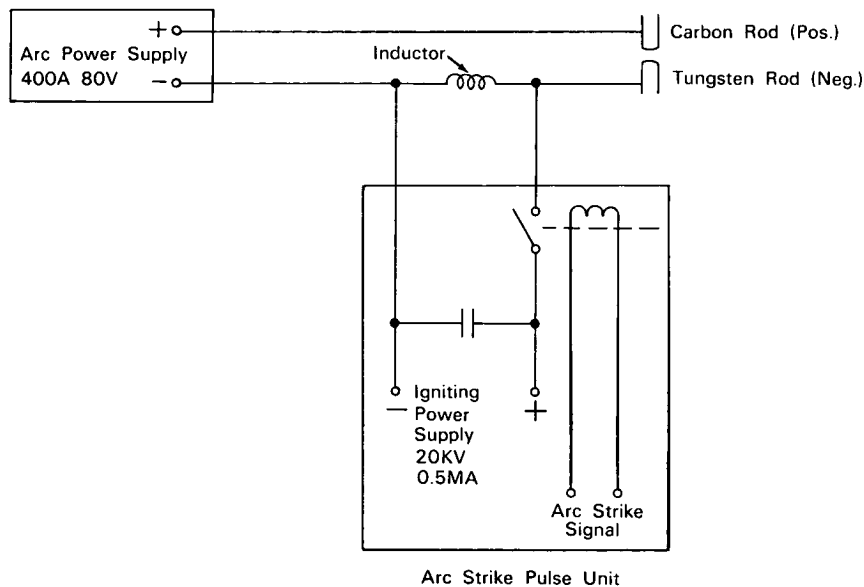


# NASA TECH BRIEF



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## Carbon Arc Ignition Improved by Simple Auxiliary Circuit



**The problem:** Striking a carbon arc requires ionization of the gap by mechanically reducing gap size, auxiliary starting electrodes, ultraviolet radiation, or "seeding" the gap to lower the required ionization potential. The mechanical method risks electrode contact and resultant contamination plus erosion. The other methods require complicated equipment.

**The solution:** Inserting a high-voltage, low-current pulse in series with the arc power supply. This auxiliary supply efficiently ignites the arc and is easily and economically produced.

**How it's done:** An inductor is placed in the negative line between the arc power supply and the nega-

tive electrode (tungsten rod). An auxiliary high-voltage, low-current igniting power supply charges the capacitor to provide the igniting pulse to the inductor. The arc power supply is turned on about three seconds prior to the arc strike signal to ensure arc power at the electrodes when the igniting pulse arrives. The arc strike signal closes the relay, discharging the capacitor across the inductor. This applies the high-voltage pulse in series with the arc power supply ionizing the gap and igniting the arc.

### Notes:

1. This circuit should be of use wherever arc burners, arc searchlights, or plasma jets are used.

(continued overleaf)

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center  
P.O. Box 1537  
Houston, Texas, 77001  
Reference: B65-10018

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated.  
Source: Radio Corporation of America under contract to Manned Spacecraft Center  
(MSC-103)