

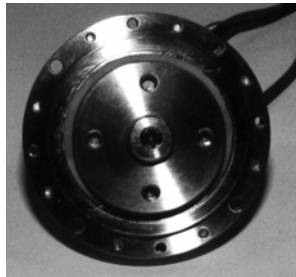


# Applied Pulsed Power, Inc.™

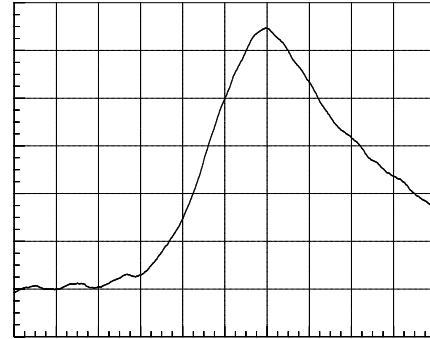
2025 Dryden Road  
PO Box 348  
Freeville, New York, 13068-0348

tel 607.844.3426  
fax 607.844.3428  
www.appliedpulsedpower.com

## High Speed Gas Valve



*Model S20A  
High Speed Gas Valve*



*Sample gas pressure profile, 10 $\mu$ s/div.*

Applied Pulsed Power, Inc. designed the High Speed Gas Valve for use in pulsed plasma and ion diode systems which require radial gas flow and fast gas pressure rise and fall times. The valve has operated continuously in vacuum at 5 pulses/second and up to 100 pulses/second in burst mode, with only air cooling on the body. The duty cycle is limited by heat rejection, which varies with mounting, the operating environment, and the cooling method. The gas pressure profile is highly reproducible from pulse to pulse. The valve has been used with inert gases, hydrogen, nitrogen and air.

The valve contains a magnet coil which is pulse driven. The magnetic field imparts a force to the single moving part, a low mass beryllium copper Belleville spring diaphragm. The diaphragm briefly lifts off the seal at its outer diameter, permitting gas to flow radially from the valve, before it snaps shut. The design life of the diaphragm is  $10^8$  pulses and it is easily replaced.

Provision is made for mounting user hardware on the end of the valve, beyond the radial gas outlet. An electrical feed can also be provided. Custom valve body designs can be accommodated, within constraints imposed by the magnet coil assembly. **Higher repetition rates, different plenum sizes and other operating pressures can be provided.** Please consult with APP.

The APP Model S08 pulser is built to drive one or more of the Model S20A valves.

## Specifications for Model S20A High Speed Gas Valve

<b>Drive requirements:</b>	Model S08 Driver or equivalent
<b>Other specifications:</b>	
Gas plenum volume	1.4 cm <sup>3</sup>
Gas plenum pressure	45 psig maximum
Repetition rate (consult APP for higher rates)	5 pulses/second continuous, in vacuum with air cooling of body 100 pulses/second burst
Cooling required	Maintain aluminum body at $\leq 60^{\circ}$ C
<b>Standard wetted materials:</b> (consult APP for optional materials)	Buna-N O-rings Aluminum Epoxy Beryllium copper Brass

Since 1990, the mission of Applied Pulsed Power, Inc. has been the development of products for industrial applications where pulsed power technology has compelling advantages over existing methods. APP has been developing ion beam technology for industrial surface treatment for five years. The company also designs and supplies prototype systems including high power pulse generators, pulsed high magnetic field coils and high speed gas valves. We can work closely with you to meet your needs, often by modifying proven designs with a minimum of engineering costs.