

Triggered Spark Gaps

Ceramic-Metal



Description

PerkinElmer's Triggered Spark Gaps are a family of versatile high voltage switches. They consist of three electrodes in a hermetically sealed, pressurized ceramic envelope. Triggered Spark Gaps are generally characterized by a peak current capability of thousands to tens of thousands of amperes, delay times of tens of nanoseconds, arc resistance of tens of milliohms and inductance of 5 to 30 nanohenries. They are suitable for capacitor switching applications such as flashlamps, electrically pumped gas lasers, medical lithotripters, and as crowbar protection devices.

Features

- Fast switching operation
- High voltage holdoff
- Ceramic-metal construction
- No warm up period
- High current capability
- Long life

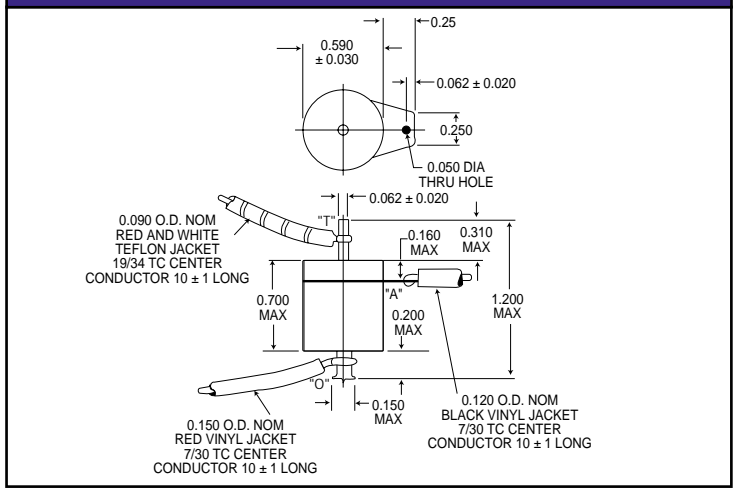
Standard Model Operating Characteristics (1)

PerkinElmer Model No.	O-A Range, kV Min/Max (1,10)		SBV, kV (4)	V _T Min Trig (kV Open Circuit) (5)	Trigger Mode	Recommended PerkinElmer Transformer (6, 7)	Typical Delay Time* * when operated in mode A (Nanoseconds)		Simultaneous Ratings Crowbar Service, Typical Life: 5000-20,000 Shots (11)	Simultaneous Ratings Repetitive Switching Typical Life: 1-5 Million Shots (11)
	(2)	(3)					At 70% SBV	At 40% SBV		
GP-89	0.7	2.1	2.6	10	C	TR-148A	100	1000	5 kA peak 0.1 coulomb	3 millicoulombs/shot I _b = 35 mAdc I _p = 6 Aac
GP-90	1.3	3.4	4.2		C					
GP-91	4.4	10	12.5		A,C	TR-180B				
GP-93	8	20	25		A, C					
GP-82B	0.4	1.6	2	10	A,B	TR-148A	30	300	7.5 kA peak 0.2 coulomb	4 millicoulombs/shot I _b = 60 mAdc I _p = 8 Aac
GP-31B	2	6	7.5		A					
GP-20B	3.5	11	14			TR-180B				
GP-46B	8	20	25							
GP-85	2	6	8	20	A,B	TR-1795	30	300	25 kA peak 0.4 coulomb	4 millicoulombs/shot I _b = 100 mAdc I _p = 10 Aac
GP-86	6	15	20		A					
GP-87	10	24	30			TR-180B TR1700				
GP-70	12	36	42(8)							
GP-30B	2	6	7.5	20	A,B	TR-1795	30	300	50 kA peak 0.5 coulomb	10 millicoulombs/shot I _b = 200 mAdc I _p = 15 Aac
GP-22B	6	15	19		A					
GP-12B	10	24	30			TR-1700				
GP-14B	12	36	42(8)							
GP-41B	12	36	42	20	A,B	TR-1795	30	300	Peak currents up to 100 kA and charge transfer up to 5 coulombs are obtainable at reduced life (100-1000 shots).	
GP-32B	20	48	60(8)		A					
GP-15B	25	60	86(8)							
GP-74B	40	100	120(8)	20	A	TR-1795 TR-1700				
GP-81B	40	100	120(9)							

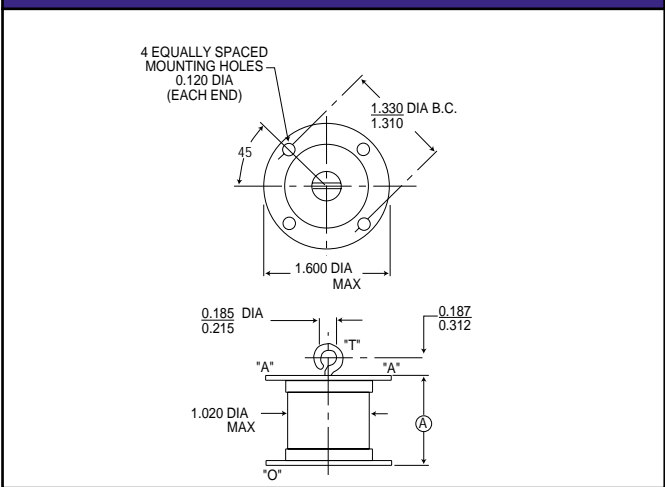
Notes

- Optimum operating voltage is typically 60 to 80% of SBV.
- Operation below minimum value may result in erratic firing over time.
- Operation at this value may result in self-firing over time.
- Represents minimum main-gap breakdown voltage with no trigger applied.
- Value shown contains safety factor for end-of-life requirements.
- PerkinElmer TM-11A Trigger Module can be used to trigger all gaps.
- Transformers listed vary mechanically and electrically. See PerkinElmer Transformer Data Sheet.
- These units must be operated in a liquid or gas dielectric to prevent external flashover: GP-70 and GP-14B, above 24 kV; GP-32B and GP-15B, above 35 kV; GP-74B and GP-81B, above 60 kV.
- Designed for high altitude, high holdoff conditions.
- Other voltage ranges and mechanical configurations are available on request; for example, the GP-20B can be supplied with a 6 to 16 kV operating range by specifying GP-20B-20. The 20 would be the SBV and E-E maximum would be 80% of SBV = 16kV.
- E = Stored energy in joules ($\frac{1}{2}CV^2$), I_b = average current in amperes, I_p = RMS current in amperes, R = total circuit resistance in ohms, P = average power in watts.

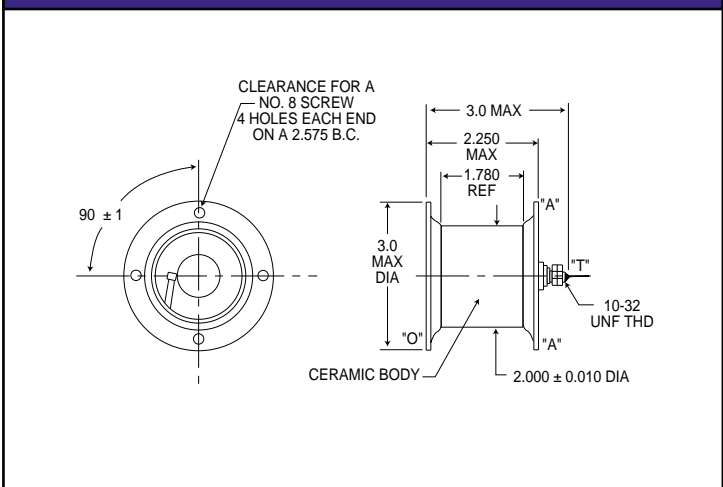
GP-89, GP-90, GP-91, AND GP-93



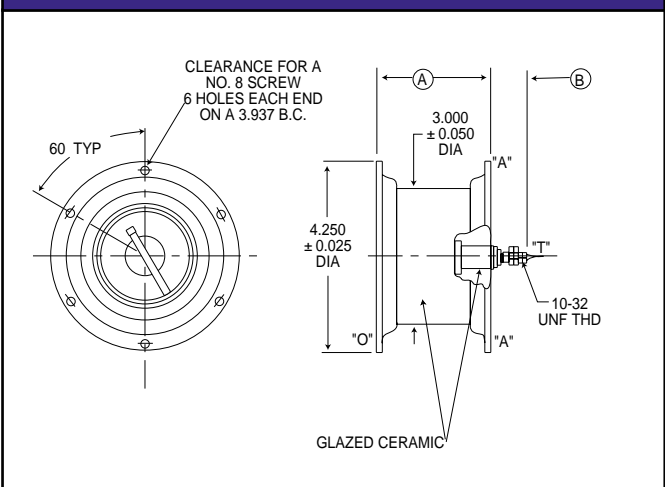
GP-20B, GP-31B, GP-46B, AND GP-82B



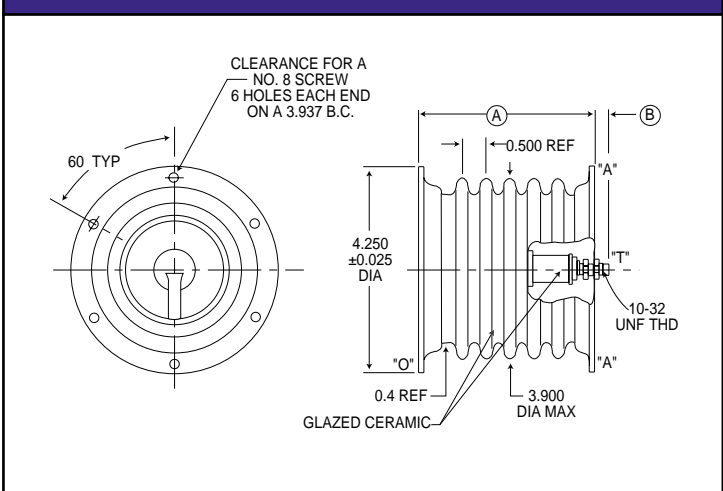
GP-70, GP-85, GP-86, AND GP-87



GP-12B, GP-14B, GP-15B, GP-22B, GP-30B, GP-32B, AND GP-41B



GP-74B AND GP-81B



"A" = ADJACENT ELECTRODE, "O" = OPPOSITE ELECTRODE, "T" = TRIGGER PROBE

Note: Dimensions in inches.

Triggered Spark Gaps

Environmental Specifications

Ambient temperature range	
Operating temperature range	-54 to +100°C
Nonoperating temperature range	-65 to +125°C
Vibration	15 to 500 Hz at 10 g maximum
Shock	50 g, 11 milliseconds
Thermal Shock	-65 to +125°C

Electrical Specifications

Electrode capacity	Less than 5 pf.
Interelectrode resistance	Greater than 10^{10} ohms at 500 V.

Mechanical Specifications

Envelope	Ceramic-metal, hermetically sealed, exposed metal parts nickel plated.
Torque applied to studs	6 inch-pounds maximum.

Marking

PerkinElmer's trademark, part designation, and date code.

PerkinElmer welcomes inquiries about special types. We would be pleased to discuss the requirements of your application and the feasibility of designing a type specifically suited to your needs.

For more information email us at opto@perkinelmer.com or visit our web site at www.perkinelmer.com/opto
Note: All specifications subject to change without notice.

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