PerkinElmer™
optoelectronics

EVERYTHING

IN A

NEW

LIGHT.

Triggered Spark Gaps

Ceramic-Metal

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

PerkinElmer™
optoelectronics

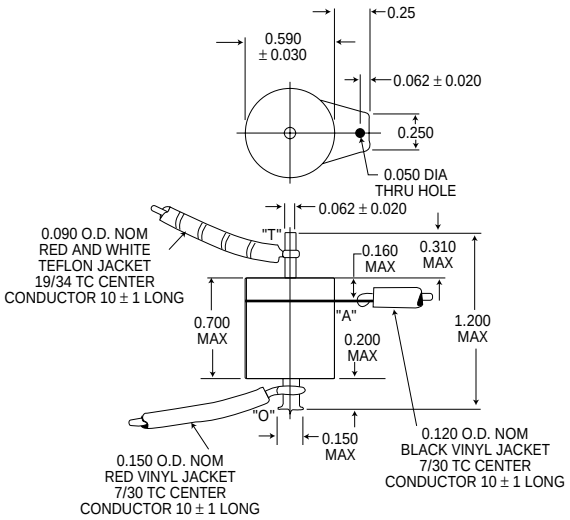
Triggered Spark Gap Ratings

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

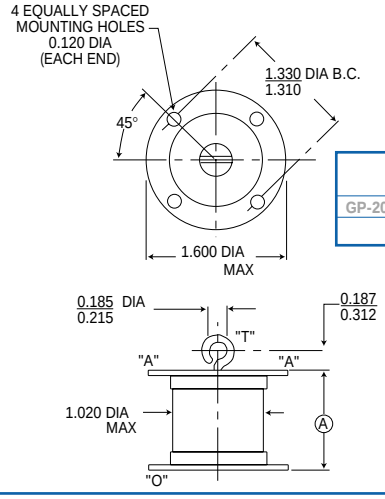
Notes

1. Optimum operating voltage is typically 60 to 80% of SBV.
2. Operation below minimum value may result in erratic firing over time.
3. Operation at this value may result in self-firing over time.
4. Represents minimum main-gap breakdown voltage with no trigger applied.
5. Value shown contains safety factor for end-of-life requirements.
6. PerkinElmer TM-11A Trigger Module can be used to trigger all gaps.
7. Transformers listed vary mechanically and electrically. See PerkinElmer Transformer Data Sheet.
8. 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.
9. Designed for high altitude, high holdoff conditions.
10. 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.
11. E = Stored energy in joules ($\frac{1}{2}CV^2$), Ib = average current in amperes, Ip = RMS current in amperes, R = total circuit resistance in ohms, P = average power in watts.

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

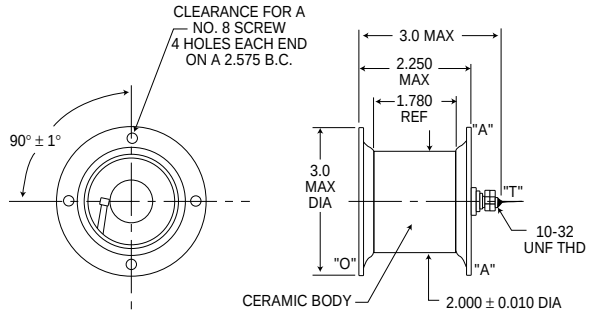


GP-20B, GP-31B, GP-46B, AND GP-82B

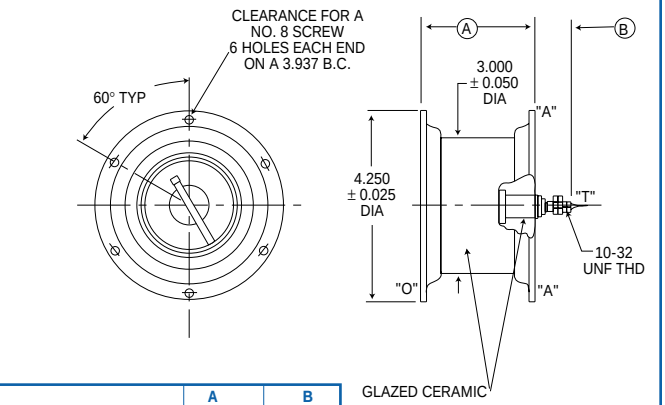


TYPE	A MAX
GP-20B,31B AND 82B	1.187
GP-46B	1.550

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

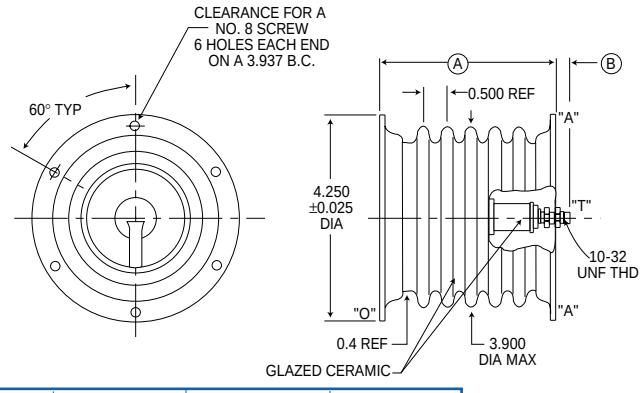


GP-12B, GP-14B, GP-15B, GP-22B, GP-30B, GP-32B AND GP-41B



TYPE	A MAX	B MAX
GP-12B, 14B, 22B AND 30B	2.375	0.750
GP-15B, 32B AND 41B	3.625	0.250

GP-74B and GP-81B



TYPE	A MAX	B MAX	MIN CREEPAGE PATH IN INCHES
GP-74B	3.625	0.250	4
GP-81B	4.500	RECESSED	6

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

Note: Dimensions in inches

All data and specifications subject to change without notice.

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.

Our Quality and Environmental Policy

"Our goal is to supply our customers the agreed quantity of specified products and services, defect free and on time while conducting business in an environmentally responsible manner"

* All values are nominal; specifications subject to change without notice.

To request additional information, receive a quote, or place an order, please contact PerkinElmer Optoelectronics at office listed below.

PerkinElmer Optoelectronics
35 Congress Street
Salem, MA 01970
Toll Free: (800) 950-3441 (USA)
Phone: (978) 745-3200
Fax: (978) 745-0894

www.perkinelmer.com/opto