GPV-Series
Triggered Vacuum Gaps

Key Features

- Wide operating voltage range
- Ceramic-metal construction
- No warm up period
- High current capability
- Long life

Applications

- Crowbar circuit protection

Description

The Triggered Vacuum Spark Gaps are ideal high-voltage switches for applications where a wide operating voltage range is desired. The low end of the operating voltage range is independent of the Static Breakdown Voltage (SBV). Operating ranges from 300 volts to 80 kilovolts are possible. Switching times (from the trigger input to the start of main gap current flow) of less than 1 microsecond may be achieved when using a suitable trigger. These switches are commonly used in "crowbar" circuits for protection against overvoltage conditions.

Table 1 Specifications

Environmental Specifications	
Ambient temperature range	
Operating temperature range	-54 to +100°C without mercury, -54 to +50°C with mercury
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 500V.
Mechanical Specifications	
Envelope	Ceramic-metal, hermetically sealed, exposed metal parts nickel plated
Torque applied to studs	6 inch-pounds maximum

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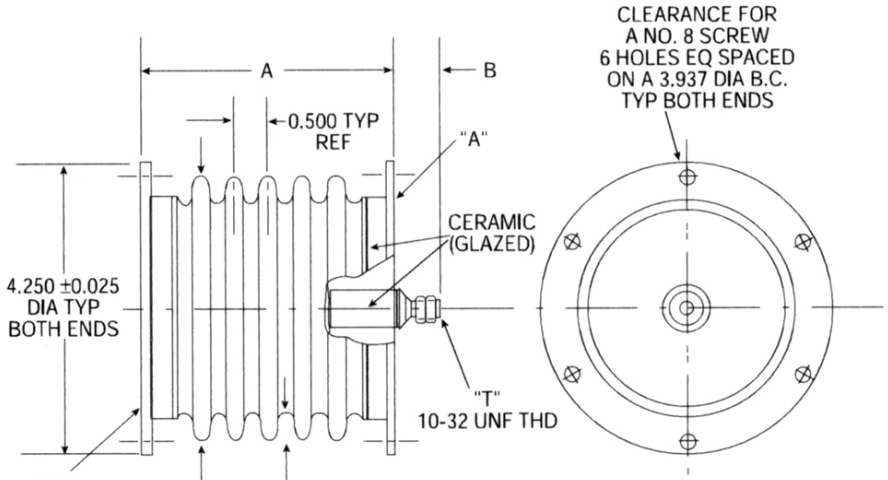
TABLE 2 Standard Model Operating Characteristics [1]

Type Number	Static Breakdown Voltage [2,7] (Kilovolts)	MaximumPeak Current [3] (Kiloamperes)	Maximum Conducted Charge per shot [4] (Coulombs)	Contains Wall Sheild [5] (Y/N)	Contains Mercury [6] (Y/N)	Typical Operating Voltage Range (Kilovolts)
GPV-63	65	50	0.5	N	Y	0.3 - 50
GPV-6301	50	50	0.5	N	Y	0.3 - 40
GPV-6313	100	60	0.5	Y	N	0.3 - 80
GPV-6322	65	60	0.5	Y	N	0.3 - 50
GPV-7013	40	20	0.3	N	N	0.3 - 32

Notes

1. The operating characteristics shown here are intended as an aid to preliminary gap selection. The characteristics listed are typical for the indicated types under standard environmental conditions. The conditions found in many applications will influence gap operating characteristics; therefore, some characteristics may not be simultaneously achievable. Prospective users of these gaps should be aware of the limitations in the data being presented. Contact Excelitas for information concerning the performance to be expected in the intended application.
2. SBV is the Static (Self) Breakdown Voltage. It is the dc voltage across the main gap (between the opposite and adjacent electrodes, O-A) above which the gap is likely to break down (conduct) with no trigger applied.
3. The peak current applies for a critically damped discharge. Current reversals degrade life, so gap operation in the underdamped condition should be avoided when possible.
4. In underdamped circuits, each current half-cycle contributes to the total conducted charge, i.e., conducted charge increases independently of the direction of gap current. Therefore, the total conducted charge, including any "follow- through" current, should not exceed the maximum conducted charge indicated.
5. Includes an internal shield to slow deposits of discharge debris on the insulating ceramic.
6. A small amount of metallic mercury is used in these gaps to aid in the formation of the initial discharge. These gaps should not be operated above 50°C. Care should be exercised in the handling and disposal of these gaps.
7. Proper application of these gaps may require them to be immersed in insulating oil or gas depending on the operating voltage level and environmental factors. A method to circumvent electrical breakdown across the outside surfaces of the ceramic insulators of the gap may be necessitated in some uses. Some of the more important factors to consider in determining the insulation qualities of the environment are altitude (local atmospheric pressure); humidity; dust; cleanliness; temperature and pulsed versus dc operation.

FIGURE 1 Mechanical Specifications GPV-63, GPV-6301



TYPE	A MAX	B MAX
GPV-63	4.500	RECESSED
GPV-6301	3.625	0.250

FIGURE 2 Mechanical Specifications GPV-6313

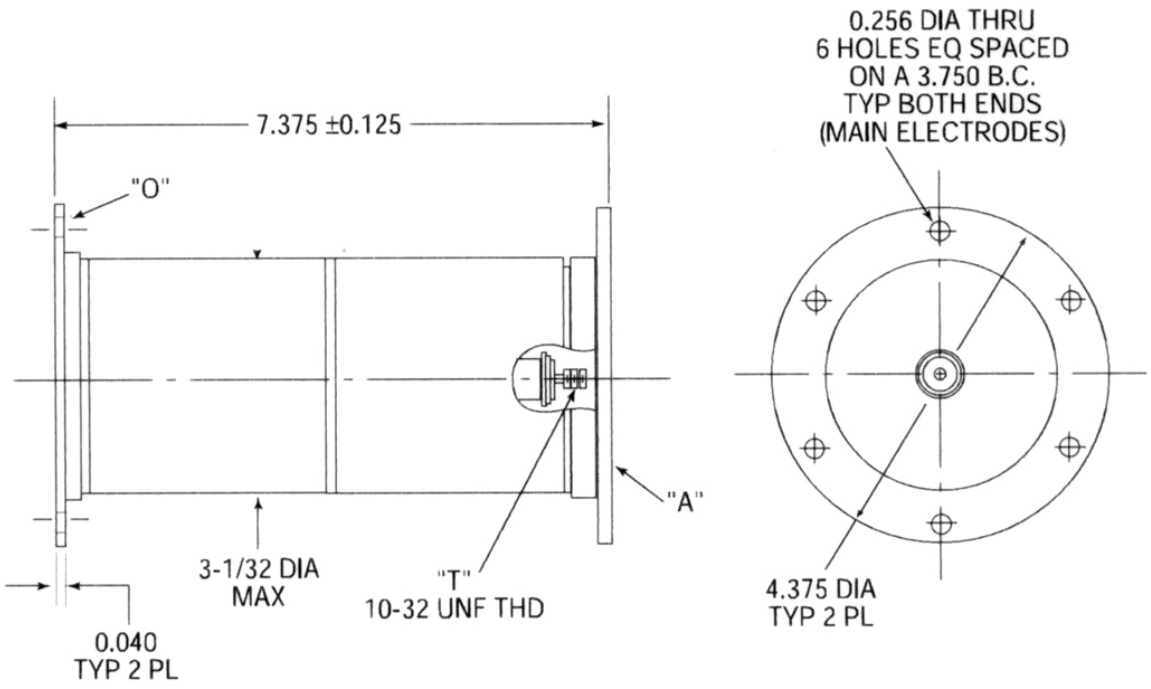


FIGURE 3 Mechanical Specifications GPV-6322

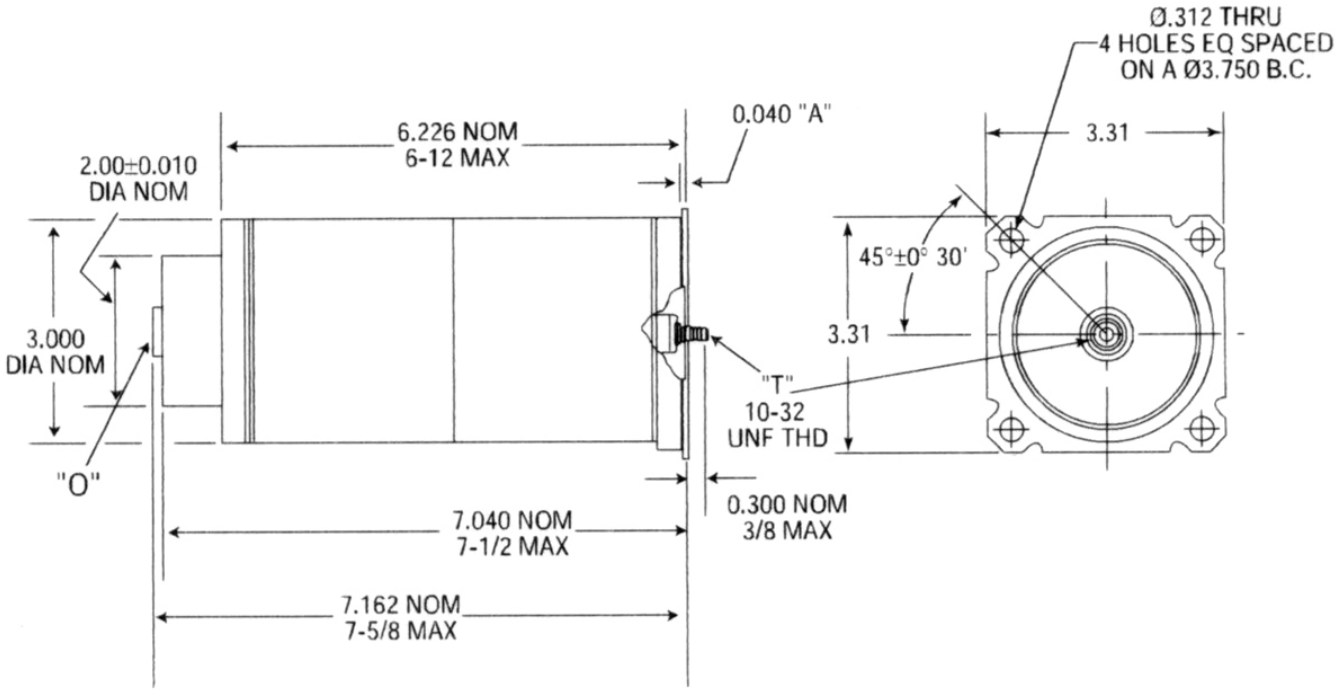
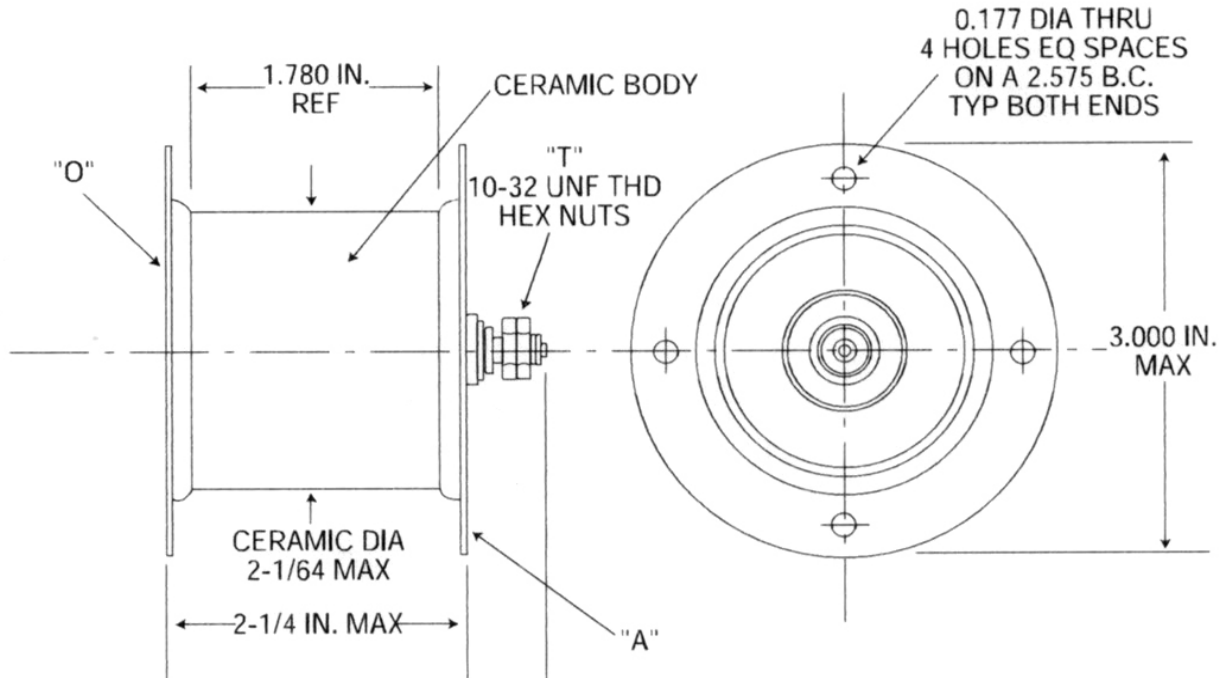


FIGURE 4 Mechanical Specifications GPV-7013



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AES@excelitas.com
www.excelitas.com

Excelitas Technologies
Energetic Systems
1100 Vanguard Blvd.
Miamisburg, Ohio 45432
USA
Telephone: (+1) 937.865.3800
Toll Free: (+1) 866.539.5916
Fax: (+1) 937.865.5170

Excelitas Technologies
Power Supplies
1330 East Cypress Street
Covina, California 91724 USA
Telephone: (+1) 626.967.6021
Toll Free: (+1) 800.363.2095
Fax: (+1) 626.967.3151

Excelitas Technologies
Frequency Standards
& Switching
35 Congress Street
Salem Massachusetts 01970
USA
Telephone: (+1) 978.745.3200
Toll Free: (+1) 800.950.3441
Fax: (+1) 978.745.0894

Excelitas Technologies
Lighting & Radiant Sources
44370 Christy Street
Fremont, California 94538-3180
USA
Telephone: (+1) 510.979.6500
Toll Free: (+1) 800.775.6786
Fax: (+1) 510.687.1140

Excelitas Technologies
Sensors
22001 Dumberry Road
Vaudreuil-Dorion, Quebec
Canada J7V 8P7
Telephone: (+1) 450.424.3300
Toll Free: (+1) 800.775.6786
Fax: (+1) 450.424.3345

Excelitas Technologies
International Sales Office
Bat HTDS BP 246, 91882
Massy Cedes, France
Telephone: +33 (1) 6486 2824

For a complete listing of our global offices, visit www.excelitas.com/Locations

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