

Trigger Pentode

GPE175M

Primed trigger tube with two trigger electrodes suitable for use in bi-directional ring counters and in "OR" gates

Limit Ratings

Maximum anode voltage to prevent self ignition in all tubes (trigger voltage + 173 V)	+310 V
Minimum trigger voltage necessary to cause either trigger to breakdown in all tubes (anode voltage 300 V)	+183 V
Maximum trigger voltage at which trigger breakdown will not occur in any tube (anode voltage 300 V)	+173 V
(During the first 3,000 hours of operating life the trigger breakdown voltage will not drift outside the limit ratings specified above.)	
Maximum trigger to anode voltage	+200 V
Minimum trigger to cathode current necessary to cause transfer in all tubes (anode voltage 300 V)	100 μ A
Minimum trigger to cathode current necessary to cause transfer in all tubes, with 100 pF capacitor between cathode and trigger (anode voltage 300 V)	8 μ A
Maximum cathode current	
Peak—maximum duration 20 μ S	50 mA
—maximum duration 50 mS in 10 S	6 mA
D.C.	3.5 mA
Maximum speed of operation, determined by circuit conditions	Approx. 1,000 c.p.s.

Characteristics

Anode running voltage at 2.5 mA	150 \pm 5 V
Trigger running voltage	135 V nom.
Auxiliary cathode current (Aux. cathode returned to a minimum of -95 V via 10 M Ω)	25 μ A nom.
De-ionization time	600 μ S max.
Minimum current at which all tubes will remain conducting (Ra 470 k Ω)	200 μ A

Recommended Operating Conditions

Anode supply voltage	280—310 V
Anode to cathode current	2.5 mA
Trigger bias with respect to cathode	
Trigger resistor less than 470 k Ω	165 V max.
Trigger resistor greater than 470 k Ω	170 V max.
Minimum pulse required for operation (Pulse duration 100 μ S)	+25 V



GPE175M

Trigger Pentode

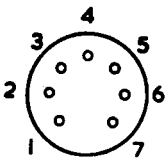
Primed trigger tube with two trigger electrodes suitable for use in bi-directional ring counters and in "OR" gates

Mechanical Data

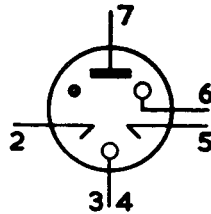
Mounting position
Weight
Base

Any
6.5 g (nominal)
B7G

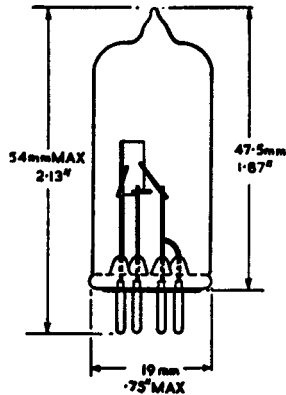
Base Connections
(underside view)



- Pin 1 } Trigger T₁
- 2 } Trigger T₁
- 3 } Cathode K₁
- 4 } Cathode K₁
- 5 } Trigger T₂
- 6 } Auxiliary cathode K₂
- 7 } Main anode A



N.B.—This tube must not be enclosed in a metal screen or can.



Trigger Pentode

GPE175M

Primed trigger tube with two trigger electrodes suitable for use in bi-directional ring counters and in "OR" gates

Notes on Operation

Rectangular pulses of at least 100 μ S duration are applied via a 1,000 pF capacitor to the triggers which are returned through 1 M Ω to +170 V bias. The tube will not fire with pulses of amplitude less than 5 V and will fire with pulses greater than 25 V.

To extinguish the main discharge, the anode-cathode potential must be reduced to below the running voltage (150 V) for a time dependent on the de-ionization characteristic. (600 μ S minimum).

Alternatively the tube may be extinguished by means of a capacitor in parallel with the A-K gap forming a self-quenching circuit.

When the tube is not conducting, the triggers are isolated from each other, but when anode current flows, both triggers have a low impedance to cathode and to each other.

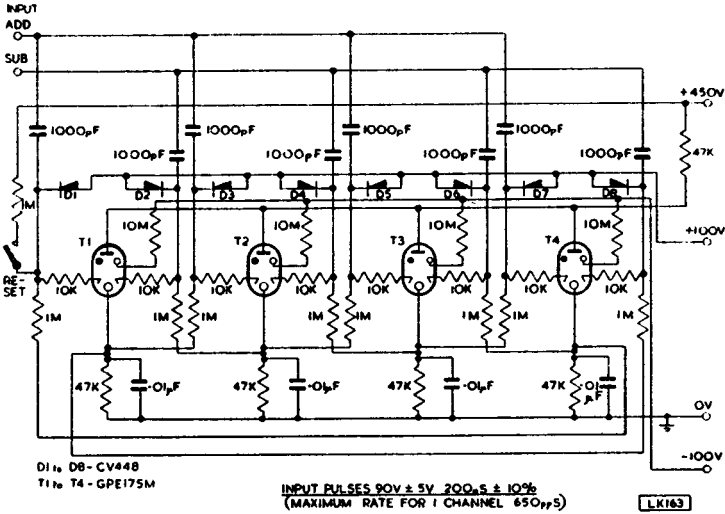
Typical bi-directional ring counter and coupling circuits are shown overleaf.



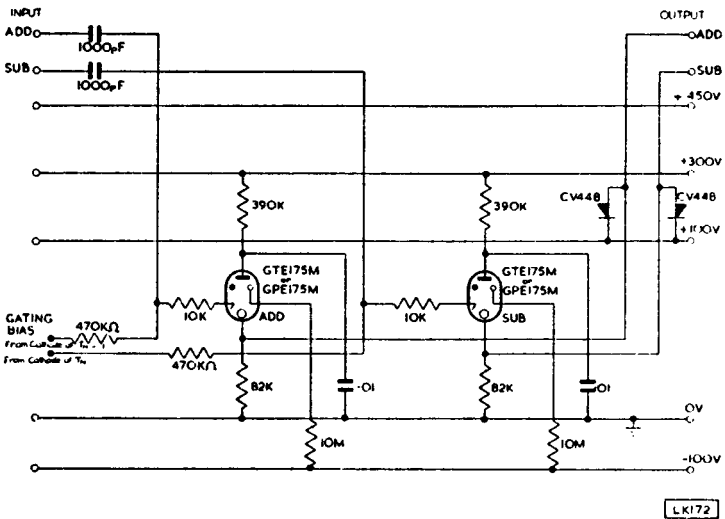
GPE175M

Trigger Pentode

Primed trigger tube with two trigger electrodes suitable for use in bi-directional ring counters and in "OR" gates



Four Stage Bi-directional Ring Counter using GPE175M tubes



Coupling Circuit for Bi-directional Counter LK163

