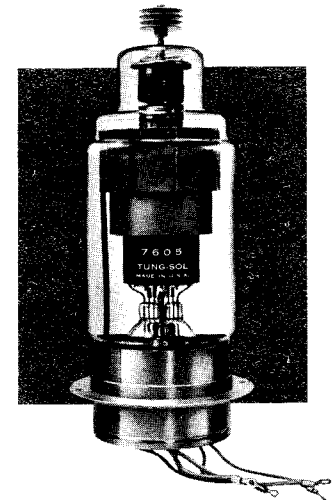


CROWBAR THYRATRON

DESCRIPTION—The 7605 is a zero bias hydrogen thyatron designed to pass high currents in “crowbar” protective circuits. As described in the application notes, destructive arc currents are short circuited by the crowbar tube before damage occurs to other tubes or circuit elements.

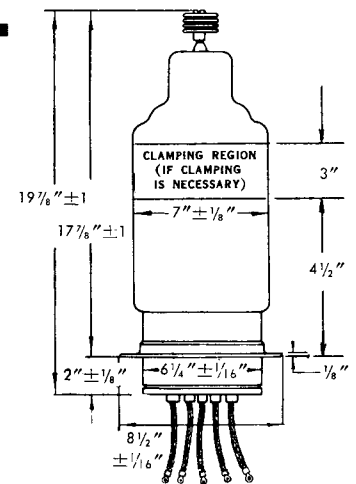
The instantaneous response, and ability to repeatedly carry extremely large currents, makes the hydrogen thyatron particularly attractive for this application. One type 7605 can handle a peak current of 3000 Amperes at 30 Kilovolts. This tube utilizes a hydrogen reservoir which promotes long life and permits optimum gas pressure adjustment for various conditions of operation.

This tube type was designed into some circuits under development type designation CH1097.



ELECTRICAL DATA

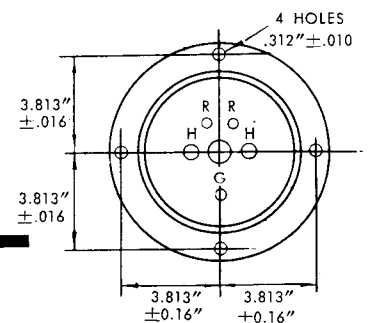
	Min	Bogey	Max	
Cathode Heater Voltage.....	6.0	6.3	6.6	Volts
Cathode Heater Current.....	20	23	40	Amperes
(at $E_f = 6.3$ volts)				
Cathode Heating Time.....	15	—	—	Minutes
Reservoir Voltage	3.5	Marked on base	6.0	Volts
Reservoir Current (Respectively).....	3.5	—	12	Amperes
Reservoir Heating Time.....	15	—	—	Minutes



MECHANICAL DATA

Type of Cooling.....	Convection
Max Net Weight.....	.10 pounds
Mounting Position	Vertical, Base down
Dimensions: See outline drawings	

LEAD AND LUG DIMENSIONS ARE GIVEN WITH BASE CONNECTION INFORMATION ON PAGE 4



TYPE 7605

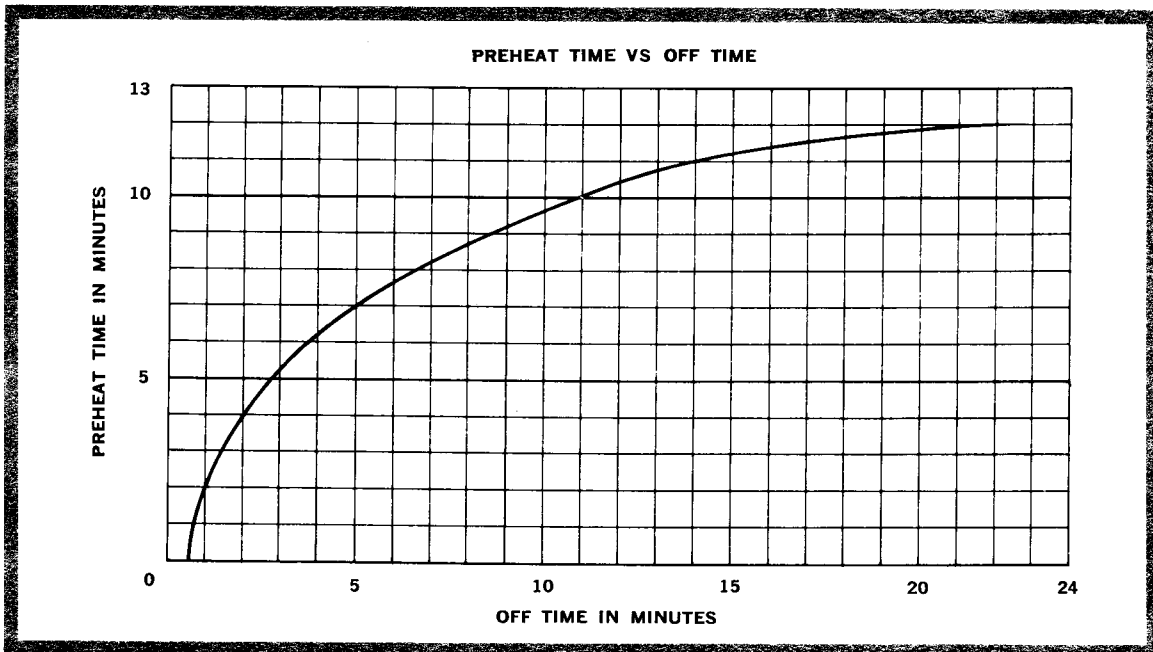
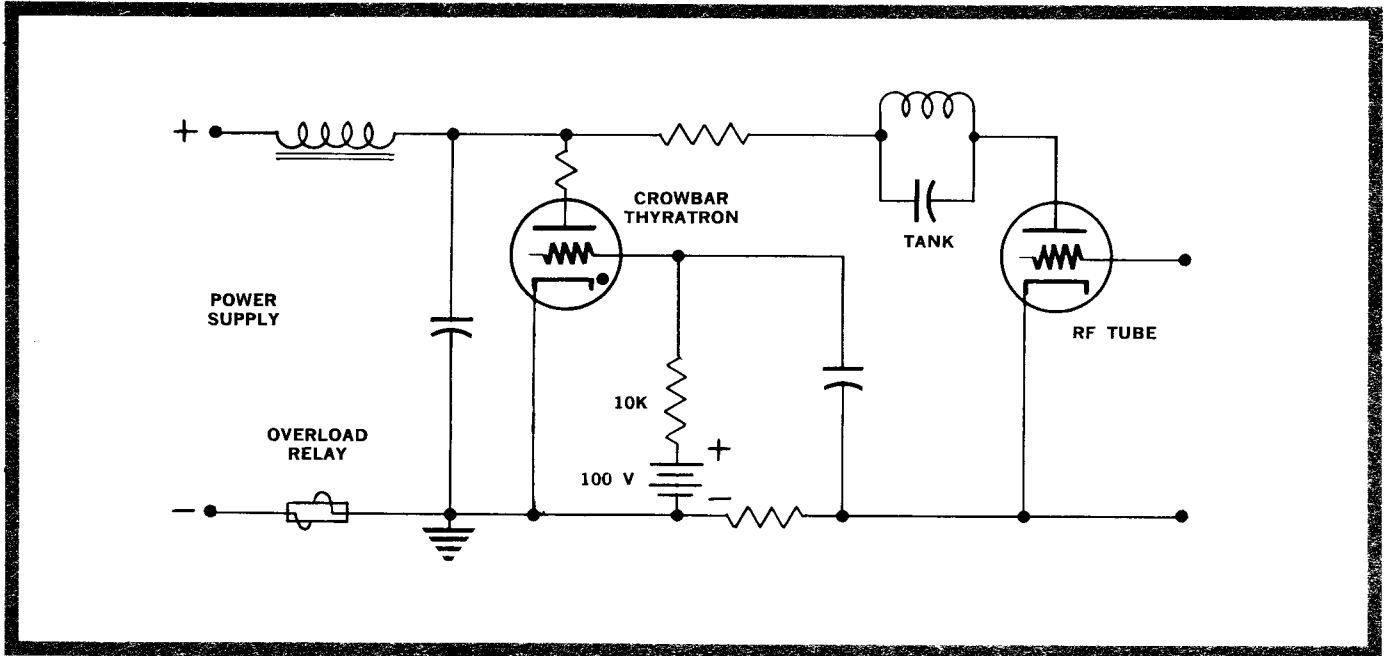
MAXIMUM RATINGS — ABSOLUTE VALUES

	Min	Max	
D-C Anode Voltage			
Forward	5	30	Kilovolts
Inverse	—	15	Kilovolts
Cathode Current			
Peak			
Filter discharge period			
0 to 1.5 Milliseconds.....	—	3000	Amperes
	—	or 1.2	Coulomb
Rectifier short circuit period			
1.5 to 100 Milliseconds.....	—	90	Amperes
1.5 to 50 Milliseconds.....	—	180	Amperes
1.5 to 30 Milliseconds.....	—	300	Amperes
Average	—	2.5	Amperes
Conduction Time per Fault.....	—	0.1	Second
Averaging Time	—	10	Seconds
D-C Grid Bias Supply Voltage.....	+100	+200	Volts
D-C Grid Bias Current.....	5	10	Milliamperes
Grid Trigger Pulse.....	1500	2000	Volts
Grid Trigger Pulse Rate of Rise.....	2000	—	Volts per microsecond
Grid Trigger Pulse Width —			
1500 Volt Amplitude.....	0.8	—	Microsecond
Grid Impedance	10	25	Ohms
Anode Delay Time.....	—	0.6	Microsecond
Anode Voltage Drop.....	50	350	Volts
Ambient Temperature Range.....	—55	+75	Degrees Centigrade

APPLICATION NOTES

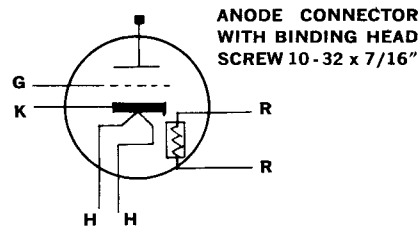
In a typical application, a crowbar thyatron is connected in series with a suitable impedance across the filter of the high voltage power supply for a high frequency triode amplifier. Whenever an arc occurs in the amplifier tube, the rising current is used to deliver a suitable signal to the grid of the thyatron. The thyatron immediately conducts to short circuit the power supply until the protective circuit breaker opens approximately 0.1 second later. To insure minimum anode delay time, positive bias is recommended.

TYPICAL CROWBAR APPLICATION



TYPE 7605

BASING CONNECTIONS

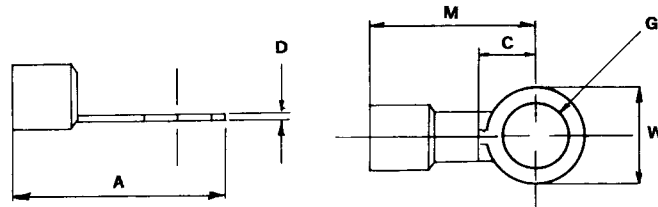


LEAD CONNECTIONS

Lead	Function	Lead Color	Lug Color	Lug
G	Grid	Green	Green	S
H	Heater	Yellow	Yellow	L
H	Heater	Yellow	Yellow	L
R	Reservoir	Red	Red	S
R	Reservoir	Red	Red	S
K	Cathode	Tube Base Flange		

Leads are flexible 8" $\pm 3/4$ " long from bottom of base to center of lug hole. Color coding as well as base marking identifies the leads.

LUG DIMENSIONS



LUG	G STUD	A MAX	W MAX	C MIN	D	M MAX
L	1/4"	1.21"	.53"	.41"	.04"	.94"
S	# 10	.90"	.31"	.30"	.03"	.74"

References:

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The Fault Diverter — A Protective Device for High-Power Electron Tubes. Report UCRL-3701 Rev. University of California, Radiation Laboratories, Berkeley, Calif.

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Gas Tubes Protect High-Power Transmitters. Electronics, Jan. 1956.

DOOLITTLE, H. D.:

High Powered Hydrogen Thyratrons. Cathode Press, VI, P6, 1954.



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