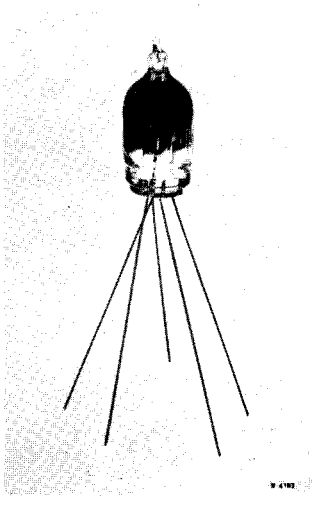
DESCRIPTION



The Z70W is a subminiature cold-cathode trigger tube with characteristics identical to those of the Z70U. The difference between the two types is that the Z70W is provided with two identical starters, so that the tube can be used in forward and backward counting circuits. Another feature of the two starters is that the second starter can be used for reset of a counter, so that no additional tube is required. In this way a saving in cost and space is obtained.

The geometry in the discharge path of the Z70W differs from the Z70U, which is caused by the influence of the second starter on the electrostatic field. The result is that the maximum starter current for transfer is slightly higher than that of the Z70U, which is the only difference in the characteristics of the two types. As with the Z70U, the life expectancy of the Z70W is longer than 30 000 hrs.

The same operational notes and precautions apply to both types. The circuit of Fig.15*a* is given for ignition with starter pulses of 100 V or higher; for forward and backward counting the circuit of Fig.15*b* may be used.

TYPICAL CHARACTERISTICS

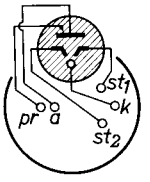
(D.C. values; primer discharge ignited; valid during life)

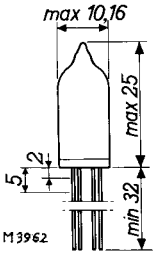
Anode supply voltage		250	V
Starter ignition voltage		137-153	V[1])
Temperature coefficient of the starter ignition voltage	max.	-25	mV/°C
Starter transfer current (see Fig.16*b*)	max.	50	μA
Starter voltage during discharge		see Fig.16c	
Anode burning voltage at 3 mA anode current (see Fig.16*d*)		111-121	V
Anode ignition voltage at zero starter voltage minimum value (see Fig.16e)		325	V
Primer-to-anode ignition voltage	max.	200	V
Primer-to-anode voltage at 3 μA primer current		155	V
Cathode current		2-4	mA
Primer current		1-10	μA
Primer series resistor (recommended value)		18	MΩ

[1]) See Fig.16*a*. The individual ignition voltage drift during life in normal application is generally less than 3 V. When a tube is ignited for very long periods, drawing negative starter current, a greater shift of the ignition voltage may occur. It is therefore advisable to design circuits for such applications for an ignition voltage of 160 V.

Z 70 W

MAXIMUM DIMENSIONS (in mm) AND
BASE CONNECTIONS





DYNAMIC CHARACTERISTICS

Starter ignition voltage (duration of pulse 20 μsec)			175	V^2)
Pulse height plus starter bias voltage (recommended value)			200	V^2)
Anode delay time			5	μsec^3)
Maximum counting frequency			2-5	kc/s^3)
Typical component values for self extinguishing pulse forming circuits		see Fig.16		
Anode resistance	1.8	1.2	0.7	MΩ
Capacitor	300	600	2000	pF

LIMITING VALUES (absolute limits)

Anode supply voltage (with primer ignited)	max.	310	V
	min.	200	V
Cathode current (average time max. 1 sec)	max.	4	mA
Peak cathode current	max.	16	mA^4)
Negative starter current (tube ignited)	max.	150	μA
Negative starter current (tube extinguished)	max.	0	μA
Starter series resistance	max.	20	MΩ
Negative starter pulse voltage at 300 V supply	max.	-30	V
at 200 V supply	max.	-50	V
Ambient temperature	max.	70	°C

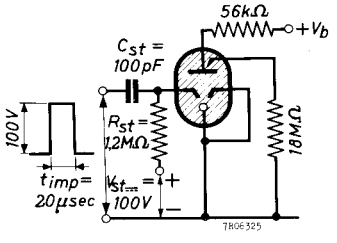


Fig.15a. Recommended circuit with pulse ignition.

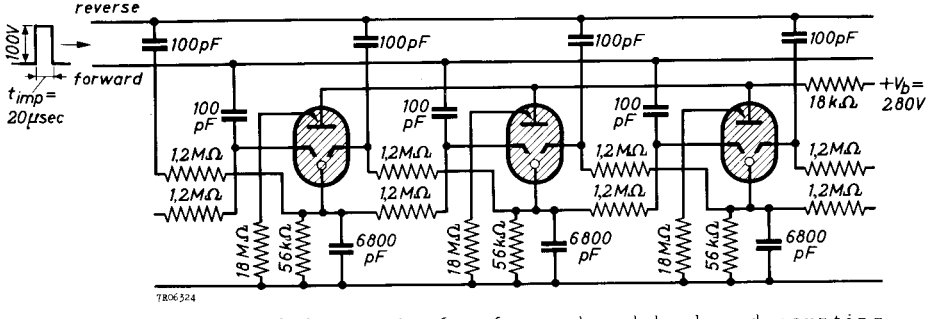


Fig.15b. Recommended circuit for forward and backward counting.

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[2]) See Fig.15a.

[3]) See Fig.15b.

[4]) Higher peak currents are permissible in pulse-forming circuits.

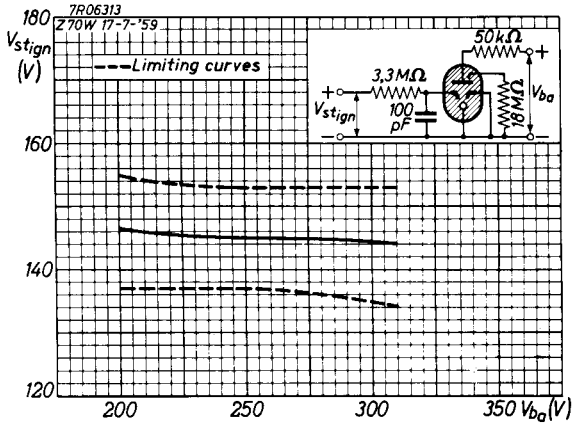

Fig. 16a. Starter breakdown characteristic.

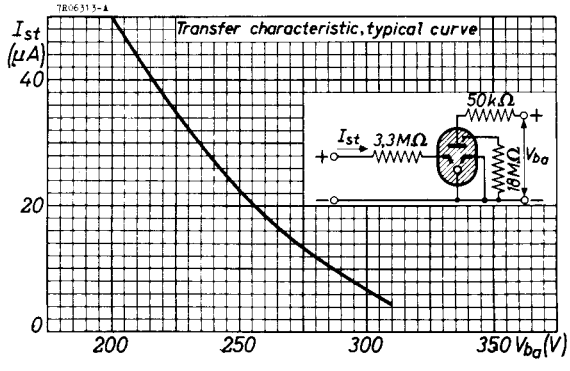

Fig.16b. Transfer characteristic.

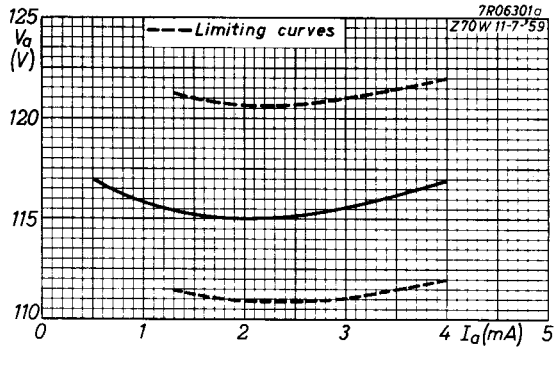

Fig.16c. Anode burning voltage characteristic.

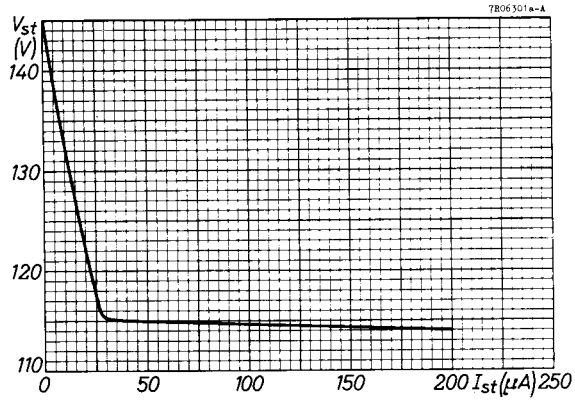

Fig. 16d. Starter burning voltage characteristic.

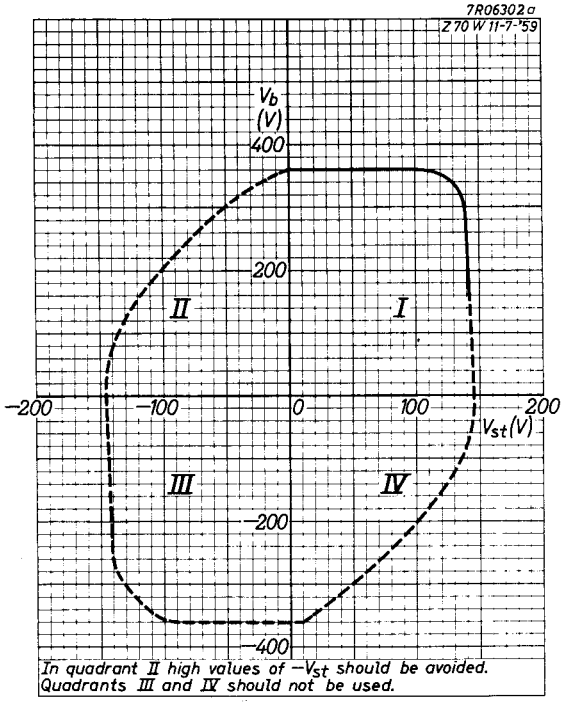

Fig. 16e. Breakdown characteristic.

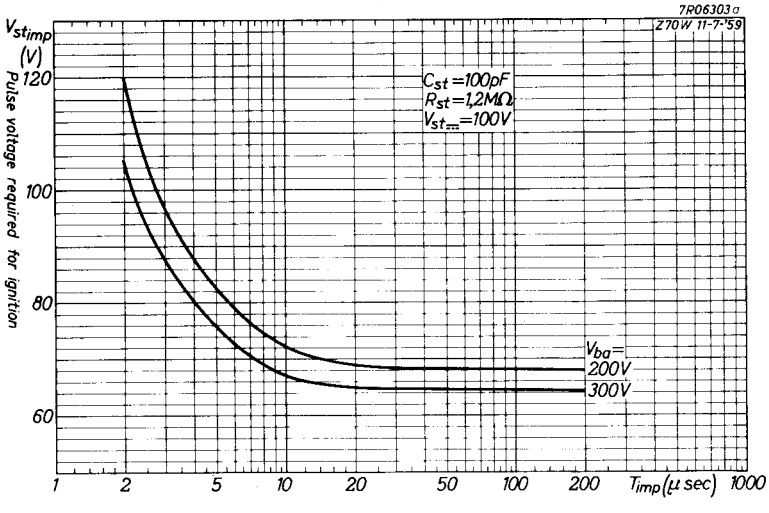

Fig. 16 f. Starter pulse for ignition, as a function of the pulse time, with the anode supply voltage as parameter (see Fig.15a).

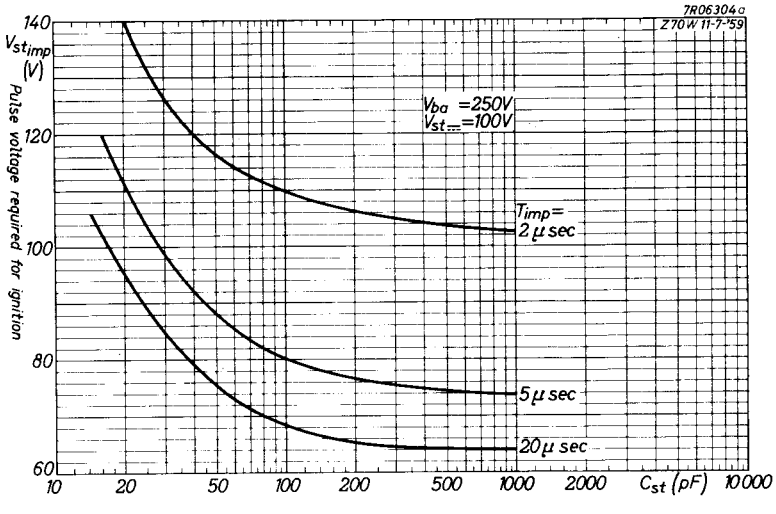

Fig. 16 g. Starter pulse height for ignition, as a function of the starter capacitor with the duration of the pulse as parameter (see Fig. 15a).